



# VALIDATION REPORT BELL ECOPOWER SDN BHD

## VALIDATION OF THE BIOMASS BASED POWER PLANT IN BATU PAHAT IN JOHOR STATE, MALAYSIA

REPORT No. MALAYSIA-VAL/0004/2011

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**BUREAU VERITAS CERTIFICATION**

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## VALIDATION REPORT

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Client: <b>Bell Ecopower Sdn Bhd</b>	Client ref.: <b>Bala Subramaniam Themudu</b>

## Summary:

Bureau Veritas Certification has made the validation of the Biomass based power plant in Batu Pahat in Johor State, Malaysia project of Bell Ecopwer Sdn Bhd located on Lot no 4960, Parit Ju, Simpang Kiri, 83000 Batu Pahat in Johor State in Malaysia on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology AMS-I.D and version 17 and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: <b>MALAYSIA-val/0001/2011</b>	Subject Group: <b>CDM</b>
Project title: <b>Biomass based power plant in Batu Pahat in Johor State, Malaysia</b>	
Work carried out by: <b>Ram Madhukar Desai (Team Leader)</b> <b>Toh Ket Tiong (Team Member)</b> <b>Tony Li Xingtong (Technical Specialist)</b> <b>Matthew Tang (Financial Reviewer)</b> <b>CA.G.N.Jayaram (Second financial reviewer)</b>	
Internal Technical Review carried out by: <b>HB Muralidhar</b>	
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## Indexing terms

Work approved by:

**Matthieu MARTINI**

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## 1 INTRODUCTION

Bell Ecopower Sdn Bhd has commissioned Bureau Veritas Certification to validate its CDM project Biomass based power plant in Batu Pahat in Johor State, Malaysia (hereafter called “the project”) at Lot No 4960, Parit Ju, Simpang Kiri, 83000 Batu Pahat in Johor State in Malaysia.

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

### 1.1 Objective

The validation serves as project design verification and is a requirement of all projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

### 1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The validation is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.



### 1.3 Validation team

The validation team consists of the following personnel:

FUNCTION	NAME	CODE HOLDER	TASK PERFORMED*
<b>Lead Verifier</b>	Ram Madhukar Desai	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input checked="" type="checkbox"/> RI
<b>Verifier</b>	Toh Ket Tiong	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input checked="" type="checkbox"/> RI
<b>Technical Specialist</b>	Tony Li Xingtong	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input checked="" type="checkbox"/> RI
<b>Financial Specialist</b>	Matthew Tang	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input checked="" type="checkbox"/> RI
<b>Second Financial Specialist</b>	CA.G.N,Jayaram	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input checked="" type="checkbox"/> RI
<b>Internal Technical Reviewer (ITR)</b>	HB Muralidhar	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> DR <input type="checkbox"/> SV <input checked="" type="checkbox"/> RI
<b>Specialist supporting ITR</b>	N.A.	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI

\*DR = Document Review; SV = Site Visit; RI = Report issuance

## 2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, according to the version 01.2 of the Clean Development Mechanism Validation and Verification Manual, issued by the Executive Board at its 55<sup>th</sup> meeting on 30/07/2010. The protocol shows, in a transparent manner, criteria (requirements), means of validation and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The completed validation protocol is enclosed in Appendix A to this report.

### 2.1 Review of Documents

The Project Design Document (PDD) submitted by Bell Ecopower Sdn Bhd and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design



Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, Bell Ecopower Sdn Bhd revised the PDD and resubmitted it on 03/01/2013.

The validation findings presented in this report relate to the project as described in the PDD version 4.0 dated 03/01/2013.

## 2.2 Follow-up Interviews

On 04-05/08/2009 and 01/06/2011 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Bell Ecopower Sdn Bhd were interviewed (see References). The main topics of the interviews are summarized in Table 1.

**Table 1 Interview topics**

Interviewed organization	Interview topics
Bell Ecopower Sdn Bhd (Project participant)	<ul style="list-style-type: none"> <li>➤ Project background information and CDM consideration</li> <li>➤ Project technology, operation, maintenance and monitoring capability</li> <li>➤ Project Monitoring and Management plant</li> <li>➤ Stake holder consultation process</li> <li>➤ Project approval status</li> <li>➤ Biomass power plant development in the area</li> <li>➤ Government policy related to Biomass power project.</li> </ul>
LOCAL Stakeholder	<ul style="list-style-type: none"> <li>➤ Project background in detail</li> <li>➤ Stakeholder comments</li> <li>➤ Social and Environmental impact of the project</li> </ul>
YTL SV Carbon Sdn. Bhd (consultant)	<ul style="list-style-type: none"> <li>➤ Applicability of selected methodology</li> <li>➤ Baseline determination</li> <li>➤ Emission reduction calculation</li> <li>➤ Emission reduction monitoring plan</li> </ul>

## 2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design.

Corrective Action Requests (CAR) is issued, where:



- (a) The project participants have made errors that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

The validation team may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Appendix A.

## **2.4 Internal Technical Review**

The validation report underwent a Internal Technical Review (ITR) before requesting registration of the project activity.

The ITR is an independent process performed to examine thoroughly that the process of validation has been carried out in conformance with the requirements of the validation scheme as well as internal Bureau Veritas Certification procedures.

The Lead Verifier provides a copy of the validation report to the reviewer, including any necessary validation documentation. The reviewer reviews the submitted documentation for conformance with the validation scheme. This will be a comprehensive review of all documentation generated during the validation process.

When performing an Internal Technical Review, the reviewer ensures that:

The validation activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.

The review encompasses all aspects related to the project which includes project design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the project participant as well as the project activity, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the validation exercise, review of sample documents.

The reviewer compiles clarification questions for the Lead Verifier and Validation Team and discusses these matters with Lead Verifier.





After the agreement of the responses on the 'Clarification Request' from the Lead Verifier as well as the PP(s) the finalized validation report is accepted for further processing such as uploading on the UNFCCC webpage.

### **3 VALIDATION CONCLUSIONS**

In the following sections, the conclusions of the validation are stated.

The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are described in the Validation Protocol in Appendix A.

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in 03 Corrective Action Requests (CARs) and 07 Clarification Requests (CLs).

The CARs and CLs were closed based on adequate responses from the Project Participant(s) which meet the applicable requirements. They have been reassessed before their formal acceptance and closure.

The number between brackets at the end of each section correspond to the VVM paragraph

#### **3.1 Approval (49-50)**

A letter of approval has been received and the following support documentation:

- The Ministry of Natural Resources and Environmental Malaysia as Malaysia DNA representative issuing Letter of Approval NRE (S)62.120 010.001 002/012 Jld 14 (12) dated 24 November 2011 /8/.
- Minister of Economy, Trade and Industry of Japan as the Designated national authority of Japan issuing of Letter of Approval on 29 August 2011/10/ authorizing Marubeni Corporation as Project Participant for the Biomass Based Power Plant in Batu Pahat in Johor state, Malaysia.

Bureau Veritas Certification received this letter from Bell Ecopower Sdn Bhd (the project participants) and does not doubt its authenticity by checking the relevant official information.

The title and contents of the letter of approval refer to the precise proposed CDM project activity title in the PDD being submitted for registration.

Bureau Veritas Certification considers the letters are in accordance with paragraphs 45 - 48 of the VVM.



### 3.2 Participation (54)

The participation for each project participant has been approved by a Party of the Kyoto Protocol.

The validation team concluded this by referring to the information on UNFCCC website i.e <http://maindb.unfccc.int/public/country.pl?country=MY> and <http://maindb.unfccc.int/public/country.pl?country=JP>

### 3.3 Project design document (57)

The validation team hereby confirms that the PDD complies with the latest forms of the guidance documents for completion of PDD.

### 3.4 Changes in the Project Activity

During the site visit on 04-05 August 2009 and 01 June 2011, DOE confirmed changes were observed in project as compared to details mentioned in webhosted PDD.

The main changes to the PDD are due to the correction for the corrective action request and clarification highlighted by DOE as well changes in the methodology version to version 17.

### 3.5 Project description (64)

The process undertaken to validate the accuracy and completeness of the project description include the document review, interview of project participants and on-site assessments.

The project located in Lot No. 4960, Parit Ju, Simpang Kiri, 83000 Batu Pahat in Johor State in Malaysia. The geographical coordinate of the location of the project activity are 1°51'N and 102°56'E.

The project activity is installation of a new power plant consisting of a 52 ton per hour boiler and a turbine utilising the palm oil mill biomass residues such as empty fruit bunch (EFB), mesocarp fibre, palm kernel shells and wood residues/chips. The main source of palm oil mill biomass is from Bell Palm Industries Sdn Bhd which is located on the same area of the proposed power plant. The remaining palm oil mill biomass and wood chips would be sourced from nearby palm oil mills and sawmills.

The installed capacity of the biomass power plant is 11MW. 10 MW of electricity generated would be supplied to the national grid of Tenaga Nasional Berhad (TNB) and the remaining 1MW is for 'auxiliary consumption' or for 'project activity's consumption'.

The basis of the project design is based on the FSR prepared by Miratech in July 2008 /18/.



The biomass residues used by for power generation are mainly palm oil mill biomass residues such as mesocarp fibres, EFB and palm kernel shell. Based on the information in the FSR, estimated annual EFB consumption is 89,142 tons/year, mesocarp fibre is 28,500 tons/year, PKS is 15,000 tons/year and wood residues is 1,800 tons/year. Most of the EFB would be met from its group company Bell Palm Industries Sdn Bhd. Part of EFB and some wood residues would be procured from external source. BVC has verified agreement sign between biomass residues supplier and Bell Eco Power Sdn Bhd.

The proposed project qualifies as a small scale project activity type ID – renewable energy projects. As the project capacity is 11 MW which is lower than 15 MW limits which is noted as the maximum threshold for capacity in Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities. Due to this reason, the project can be considered under the following category:

-Type I.D – Grid connected renewable electricity generation, version 17.

Based on the guidelines on assessment of de-bundling for SSC project activities /8/, BVC is able to confirm via site visit that there is neither a registered small scale CDM project activity nor an application to register another small scale CDM project activity with the same PP in the same project category and technology/measure, registered within the previous 2 years and whose project boundary is within 1km of the project boundary of the project. Hence, the project is not a de-bundled component of a large scale project activity.

The technology of the proposed project is commercially available locally. Details of the technology are as follows:

Type	:	Bi-drum water tube
Draught system	:	Balance draught
Capacity	:	52 ton/hour
Design pressure	:	49.5 bar
Working pressure	:	43 bar
Temperature	:	415°C super heated steam
Quantity of boiler	:	1

The proposed project would be able to reduce greenhouse gases emission by displacing fossil fuel which is mainly used to produce electricity in Malaysia.

Estimated annual average emission reduction is 52,456 tCO<sub>2e</sub>. PP chose fixed crediting period of 10 years.

There is no public funding for the project activity from Annex 1 parties.



The DOE hereby confirms that the project description in PDD (revision 3) is accurate and complete in all respects and that there are no changes to the project activity/design or boundary as compared to the webhosted PDD.

### 3.6 Baseline and monitoring methodology

#### 3.6.1 General requirement (76-77)

The steps taken to assess the relevant information contained in the PDD against each applicability condition are described below.

The project uses the simplified baseline and monitoring methodology for small scale CDM project activity i.e. AMS I.D Grid connected renewable electricity generation (version 17).

The choice of the project category and the applied methodology considered the most appropriate on based on the following assessment:

No	Criterion	Justification
1.	This category comprises renewable energy generation units such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass, that supply electricity to a national or regional grid or supplying electricity to an identified consumer facility via national/ regional grid through a contractual arrangement such as wheeling.	The project utilises biomass wastes such as EFB, mesocarp fibre, PKS and wood chips from palm oil mill and nearby wood industries and thus confirm comply with the definition of renewable biomass as per the glossary of CDM terms version 05 /6/. BVC has verified approval from Ministry of Energy, Water and Communication dated 29/09/2011 stated that the proposed project is a small renewable energy programme supplying 10MW of electricity to TNB grid.
2.	This methodology is applicable to project activities that (a) install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).	The project activity is installation of a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant) /26/. This has been confirmed by reviewing power purchase agreement between Bell Eco Power Sdn Bhd and TNB dated 3 June 2008 whereby Bell Eco Power Sdn Bhd will design, construct, own, operate and maintain the power plant /24/.
3.	If the new unit has both renewable and non renewable components (e.g. a wind/diesel unit), the eligibility limit of	The small scale project activity has only renewable component and no fossil



	15 MW for a small scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed 15 MW.	fuel component is added. Installed capacity of the project activity is only 11 MW which is lesser than 15 MW limit. This is in line with the Simplified Modalities and Procedures for Small Scale CDM project activities /9/.
4.	Combined heat and power (co-generation) systems are not eligible under this category.	The project activity is only a power plant and is <u>not</u> a cogeneration system.
5.	In the case of project activities that involve addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	The project is installation of new power plant or Greenfield project with capacity of 11MW and lesser than 15 MW /9/.
6.	In the case of retrofit or replacement, to qualify as a small scale project activity, the total output of the modified, retrofitted unit shall not exceed the limit of 15 MW.	The project activity is a Greenfield project and does not involve modification or retrofitting of existing facility. Installed capacity of the power plant is 11MW which is less than 15MW./9/.
7.	The PDD states that there is an existing project activity with the same proponent (UNFCCC Project no. 1783) with a power generation capacity of 2 MW. How it deemed the project activity under consideration to be a "Greenfield facility" and not a "capacity expansion" considering footnote 3 of A.M.S I-D version 17.	PA 1783 is a separate project. It is actually a methane recovery project from palm oil mill effluent and for using the recovered methane to generate electricity. The installed capacity of the PA is 2 MW. The technology is biogas engines.  The project activity under completeness check is a renewable solid biomass (oil palm industry waste) based power generation project. It cannot be considered as a capacity expansion because PA 1783 is a methane recovery from liquid waste and power generation from recovered methane project whereas the current project activity is power generation from solid biomass waste. Hence, the project activity is greenfield facility.



The DOE hereby confirms that the selected baseline and monitoring methodology/30/, is previously approved by the CDM Executive Board, and is applicable to the project activity, which, complies with all the applicability conditions therein.

The DOE hereby confirms that, as a result of the implementation of the proposed CDM project activity, there are no greenhouse gas emissions occurring within the proposed CDM project activity boundary, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology

### 3.6.2 Project boundary (80)

Paragraph 9 of AMS ID version 17 defined project boundary as the physical, geographical site of the renewable generation source. For the project activity, the project boundary is the power plant comprising of boiler, steam turbine and generator and the peninsular grid of TNB which is the electricity system to which all power plants are physically connected.

The DOE validated the project boundary by:

- a) Site visit and checking overall power plant layout plan.
- b) During site visit undertaken, it was observed that the installation of the power plant is in progress.

Based on the above assessment, the DOE hereby confirms that the identified boundary and the selected sources and gases are justified for the project activity.

### 3.6.3 Baseline identification (87-88)

The steps taken to assess the requirement given in paragraph 81 and 82 of the VVM are described below:

Based on paragraph 10 of the methodology, the baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generate by the operation of grid connected power plant and by the addition of new generation source.

Paragraph 11 of AMS ID, version 17 stated the baseline emissions are the product of electrical energy baseline  $EG_{BL,y}$  expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

$$BE_y = EG_{BL,y} * EF_{CO_2, grid,y}$$

Where :

$BE_y$  is baseline emissions in year y (t CO<sub>2</sub>)

$EG_{BL,y}$  is quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{CO_2, grid,y}$  is CO<sub>2</sub> emission factor of the grid in year y (t CO<sub>2</sub>/MWh)



Based on the above assessment, the DOE hereby confirms that:

- (a) All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- (d) Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD;
- (e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

#### **3.6.4 Algorithms and/or formulae used to determine emission reductions (92-93)**

The steps taken to assess the requirement outlined in paragraph 89 the VVM are described below:

To assess algorithms and/or formulae used to determine emission reductions, as outlined in the correspondent paragraph (89) of the protocol, detail and transparent spreadsheet calculation in excel file is provided by the consultant for DOE validation.

Based on the spreadsheet calculation provided by the consultant, the DOE has verified the data and parameters used in the equations, including references to any other data sources used.





Parameters determined ex-ante:

No	Parameters	Value	Source/Justification	Means of Validation
1	$P_{c zp}$	11MW	Feasibility study report	Verify feasibility study report and found correct.
2	$EF CO_2 \text{ grid } y$	0.684 tCO <sub>2e</sub> /Mwh	PTM Malaysian Energy Centre	Review the literature provided and found appropriate and conservative.
3	$SFC_{MF}$	1.411 ton/MWh	Adopted from Renewable energy resources – integrated resources planning by Anders Evald and operating parameters of the boiler and turbine as per the equipment suppliers.	Verify the calculation in annex 6 and found correct.
4.	$SFC_{PKS}$	0.905 ton/MWh	Adopted from Renewable energy resources – integrated resources planning by Anders Evald and operating parameters of the boiler and turbine as per the equipment suppliers.	Verify the calculation in annex 6 and found correct.
5.	$SFC_{EFB}$	1.780 ton/MWh	Adopted from Renewable energy resources – integrated resources planning by Anders Evald and operating parameters of the boiler and turbine as per the equipment suppliers.	Verify the calculation in annex 6 and found correct.
6.	$SFC_{wood}$	1.566 ton/MWh	Adopted from Renewable energy resources – integrated resources planning by Anders Evald and operating parameters of the boiler and turbine as per the equipment suppliers.	Verify the calculation in annex 6 and found correct.
7	$TDL_y$	11.24 %	From electricity generation and consumption data from National energy balance, Malaysia	Verify the calculation in excel spreadsheet and found correct.





As per paragraph 11 of methodology AMS ID, version 17, it stated baseline emissions of the project activity are calculated by multiplying the net electricity exported to the grid in MWh during the monitoring period with the baseline emission factor of the Peninsular grid in ton CO<sub>2e</sub>/MWh.

#### Determination of Grid emission factor

According to the methodology AMS.I.D version 17, the grid emission factor can be calculated by:

- (a) Combined Margin Method as per “Tool to calculate the emission factor for an electricity system” or
- (b) The weighted average emissions (in kg CO<sub>2e</sub>/ kWh) of the current generation mix. The data of the year in which project generation occurs must be used.

The baseline study by PTM, Malaysia has estimated the emission factor for both the approaches and has updated in December, 2008, which are as follows:

Emission factor of the peninsular grid as per combined margin method: 0.684 tonCO<sub>2e</sub>/MWh

Emission factor of the peninsular grid as per option (b): 0.695 tonCO<sub>2e</sub>/MWh

Value of 0.684 tonCO<sub>2e</sub>/MWh is selected as this is the conservative value.

#### Baseline emissions

Net electricity exported during first year = 10 MW \* 8760 hours/ year \*75%  
= 65,700 MWh/ year.

Net electricity exported during first year = 10 MW \* 8760 hours/ year \*80%  
= 70,080 MWh/ year.

Net electricity exported during first year = 10 MW \* 8000 hours/ year  
= 80,000 MWh/ year.

Baseline emissions for the first year of operation are,  
 $BE_1 = 65,700 * 0.684 = 44,939 \text{ CO}_2\text{e/year}$

Baseline emissions for the second year of operation are,  
 $BE_2 = 70,080 * 0.684 = 47,935 \text{ ton CO}_2\text{e/year}$

Baseline emissions for subsequent years of operation are,  
 $BE_y = 80,000 * 0.684 = 54,720 \text{ ton CO}_2\text{e/year}$

## Project Emissions

Project emissions consist of the project emissions due to electricity consumed from the grid and project emissions due to transportation of biomass.

The project emissions due to electricity consumed from the grid in ton CO<sub>2</sub>e/year is estimated by the following equation as per "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" / version 01

$$PE_y = EI_{imp} * EF_{CO2grid,y} * (1 + TDL_y)$$

Where

$PE_y$  is the project emissions due to electricity consumed from the grid in tonCO<sub>2</sub>e/year

$EI_{imp}$  is the quantity of electricity imported from the grid in MWh/year.

$EF_{CO2, grid,y}$  is the baseline emission factor of the grid in tonCO<sub>2</sub>e /MWh

$TDL_y$  is the average technical transmission and distribution losses for providing electricity in the grid in the year y

Parameters determined ex-ante:

No	Parameters	Value	Source/Justification	Means of Validation
1	$EI_{imp}$	12 MWh/year	Based on estimation	Review the calculation and found correct. Actual electricity consumed from the grid would be monitored and used for the estimation of project emissions.
2	$EF_{CO2, grid,y}$	0.684 tCO <sub>2</sub> e/Mwh	PTM Malaysian Energy Centre	Review the literature provided and found appropriate and conservative.
3	$TDL_y$	11.24%	National energy balance	Review the literature and found appropriate.

As such, project emissions due to electricity consumed from the grid is estimated to be 9 tonCO<sub>2</sub>e/year.

In the absence of specific formula in AMS ID, the formula to calculate the emissions from the transport has been taken from ACM0006 which is:

$$PET_y = \frac{\sum_k BF_{T,k,y}}{TL_y} \cdot AVD_y \cdot EF_{km,CO_2,y}$$

Where,

$PET_y$  = CO<sub>2</sub> emissions during the year y due to transport of the biomass residues to the project site (t CO<sub>2</sub>/year)

$TL_y$  = Average truck load of the trucks used (tons) during the year y

$BF_{T,k,y}$  = Quantity of biomass residue type k transported to the project site during the year y (tons)

$AVD_y$  = Average round trip distance (from and to) between the biomass residue fuel supply sites and the site of the project activity during the year y (km)

$EF_{km,CO_2,y}$  = Average CO<sub>2</sub> emission factor for the trucks measured during the y (tonCO<sub>2</sub>/km)

:Parameters determined ex-ante

No	Parameters	Value	Source/Justification	Means of Validation
1	$BF_{T,k,y}$	83,524 tons/year	Based on FSR	Review the calculation and found correct. Actual biomass transported would be monitored and used for the estimation of project emissions.
2	$TL_y$	15 tons/trip	Based on estimation.	It is considered for estimation purposes. Actual truck load of the trucks would be monitored during operation of the plant.
3	$AVD_y$	100km	Based on estimation.	It is considered for estimation purposes. Actual distance would be monitored during operation of the plant.
4	$EF_{km,CO_2,y}$	0.001612 tCO <sub>2</sub> /km	Based on estimation.	It is considered for estimation purposes. Actual fuel consumption, distance travelled by all trucks would be monitored during operation of the plant.

As such, project emissions due to transportation of biomass are estimated to be 598 tonCO<sub>2e</sub>/year.

Therefore the total project emission is 607 tonCO<sub>2e</sub>/year.

#### Leakage of Biomass

Attachment C to Appendix B – indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories - General guidance on leakage in biomass project activities (EB 47, Annex 28) /13/ specifies



assessment of leakage due to competing use of biomass in the region of at least 50km radius of the project activity. Based on the survey of biomass residues production in the region, all biomass are available in excess of 25% in the region and therefore the source of leakage can be neglected.

Leakage is zero as there is no energy generating equipment is transferred from another activity to the project site.

#### Emission Reductions

Emission reductions for the first year would be = 44,331 tCO<sub>2e</sub>/year.

Emission reductions for the second year would be = 47,327 tCO<sub>2e</sub>/year.

Emission reductions for the subsequent years would be = 54,113 tCO<sub>2e</sub>/year.

Based on the above assessment, the DOE hereby confirms that:

- (a) All assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- (b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;
- (c) All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;
- (d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- (e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

### 3.7 Additionality of a project activity (97)

The steps taken and sources of information used, to cross-check the information contained in the PDD on this matter are described below:

The project activity applies the attachment A to Appendix B of the simplified modalities and procedures for small scale CDM project activities to demonstrate additionality.

The following barriers have been presented to show that project activity is not the likely baseline scenario and that emissions reductions from the project are additional:

- Investment barrier  
Refer to section 3.7.3.

Therefore, the proposed project is not a likely baseline scenario and that emission reductions are hence additional.



### **3.7.1 Prior consideration of the clean development mechanism (104)**

The DOE validated the project activity start date provided in the PDD by reviewing the purchase order for boiler i.e on 24/11/2008. The date of the purchase order is the starting date of the project activity.

According to EB 49 Annex 22, if the starting date of project activity is after 2<sup>nd</sup> August 08, the project participant must inform a host party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status. However, such notification is not necessary if the PDD has been published for GSP before the start date of the project activity.

Since the starting date of project activity is after 2<sup>nd</sup> August 2008 and the PDD has been published for GSP after the start date of the project activity, the project participants is required to inform the DNA and the UNFCCC secretariat. DOE has verified and confirm notification was sent to DNA Malaysia via letter BEPSB-DNA-CDM01 dated 24<sup>th</sup> August 2008 and notification to the UNFCCC secretariat via letter BEPSB-UNFCCC-CDM01 dated 24<sup>th</sup> August 2008.

The assessment of the Prior Consideration of the project activity “Biomass based power plant in Batu Pahat in Johor state, Malaysia ” is conducted by reviewing the notification sent by PP to DNA Malaysia and the UNFCCC secretariat whereby the DOE confirms that the UNFCCC secretariat received the inform sent by Bell Ecopower Sdn.Bhd. on 24 Aug 2008. The DOE hereby confirms that this inform is made within six months of the project activity start date.

According to guidelines on demonstration and assessment of prior consideration of CDM EB 49, Annex 22 paragraph 8, it stated that if there is less than 2 years of a gap between the documented evidence the DOE shall conclude that continuing and real actions were taken to secure CDM status of the project activity. Based on the chronology of events presented in the PDD, it was found that the gap is less than 2 years from the project start date till the date of publication of PDD for global stake consultation and in line with requirements in EB49, Annex 22.

Based on the above assessment, the DOE hereby confirms that the proposed CDM project activity complies with the requirements of the latest version of the Guidance on prior consideration of CDM.



### 3.7.1.1 Historical information on project timeline

Time line and CDM consideration for the project activity are as follows::

Date	Proof of document	Reference
17/05/2008	Signing of contract with CDM consultant	/23/
23/07/2008	CDM Investment decision	/28/
24/08/2008	Notification to UNFCCC secretariat and DNA Malaysia (During this time prior CDM consideration website <a href="http://cdm.unfccc.int/Projects/PriorCDM">http://cdm.unfccc.int/Projects/PriorCDM</a> has not been established yet)	/20/ and /21/
28/08/2008	Local stakeholder meeting	PDD
07/10/2008	Resent and acknowledge from CDM team (Note: project participant re-sent a letter to request CDM team to acknowledge receipt of their letter dated 24/08/2008)	/22/
24/11/2008	Purchase order for boiler (date of start of project activity)	/29/
29/04/2009	Appointment of DOE	/30/
17/06/2009	PDD webhosted in UNFCCC CDM website	/01/
29/08/2011	Letter of approval from DNA Japan	/10/
24/11/2011	Letter of approval from DNA Malaysia	/8/

### 3.7.2 Identification of alternatives (107)

The methodology AMS ID version 17 doesn't require the assessment of alternatives for the demonstration of the additionality

### 3.7.3 Investment analysis (114)

The investment analysis has been assessed for compliance with the "Guidance on the Assessment of Investment Analysis" version 5.0.

For this project, the benchmark analysis (Option III) is chosen to determine the economic feasibility of this project activity.

The investment decision was made during the month of July. The exact date was on 23 July 2008. A copy of minutes of meeting of investment decision /28/ and feasibility study report is provided by project participants for validation.

In order to assess the claim from the project participant that the project scenario is not economically feasible without benefits from CER sales, the validation team adopted the following approach:

- a) Determining the suitability of the benchmark applied for the type of financial indicators presented according to the Guidelines on the Assessment of Investment Analysis, version 5.0 Para 12, "Local Commercial Lending



Rates". The project participant has applied benchmark analysis to demonstrate the additionality of the project. The benchmark value of 8.98% for the project activity has been confirmed to be conservative. The benchmark was determined based on the local commercial lending rates practiced in Malaysia. Bank Negara is the Central bank of Malaysia which fixes Base Lending rate (BLR) and usually charge a spread over to cover their costs and profit which results as a sum of (BLR + spread). For the year 2008, Bank Negara has announced a BLR of 6.48%. Bank Pembangunan (Development Bank) finances for renewable energy projects, CDM projects, waste management projects, etc., Bank Pembangunan charges a spread of 2.5% over BLR. Therefore the commercial lending rate becomes  $6.48 + 2.5 = 8.98\%$  which has been made the benchmark for the project activity. The references were forwarded and reviewed by the DOE validation team. The selected benchmark value for the project activity is confirmed to be conservative & appropriate for the project activity.

- b) Conducting an assessment of parameters and assumptions used in calculating the financial indicator and determining the accuracy & suitability of parameters. The project is has not and will not be receiving any public funding. However, the project activity would be financed by internal resources and financing by banks in Malaysia. The validation team had reviewed the following input values used in the financial calculation through review of sources presented in the PDD Section B.5 & financial calculation spread sheet.

Validation of financial input parameters:

1. Installed capacity=11MW

Source: Feasibility Studies Report (FSR) provided by the BELL Eco Power Sdn Bhd dated July 2008 /18/.

Appropriateness and means of validation: The total installed capacity is derived based on the Feasibility Studies Report (FSR) which is the recommended capacity by the supplier of the equipment which determines the maximum capacity the project activity.

2. Export Capacity=10MW

Source: Feasibility Studies Report (FSR) provided by the BELL Eco Power Sdn Bhd dated July 2008 /18/

Appropriateness and means of validation: Relied on the FSR, the export capacity of the project which is set at 91.3% of the total capacity of the equipment.



### 3. Total project cost=RM54,576,000

Source: Feasibility Studies Report (FSR) provided by the BELL Eco Power Sdn Bhd dated July 2008 /18/

Appropriateness and means of validation: The total project cost is derived from the FSR which consists of building & civil works, plant and machinery and office furniture & equipment. Relied on the FSR and noted that the values used are conservative and valid.

The total project cost of the project activity has been compared with 3 other similar projects in Malaysia registered as CDM projects and the total project cost value of the project activity is found to be conservative as shown below.

No	Name of project	Year of Investment Decision	Total project cost (RM)	% Difference to the project activity
1	Bandar Baru Serling Biomass power project (UNFCCC PA1091) – 13MW	2004	RM77 million	41.09% higher than the proposed project activity and thus the project cost of the proposed project activity is conservative.
2	Kunak Bioenergy project (UNFCCC PA2921) – 14 MW (10MW to grid)	2005	RM52.101 million	This project cost is 4.53% lower than the proposed project activity but this project activity was implemented in year 2005
3	Biomass energy plant at Prolific Yield (UNFCCC PA6384) – 12MW (10 MW to grid)	2009	RM67.61 million	23.88% higher than the proposed project activity; This project is very comparable to the project activity in size, capacity, type, time of investment decision, installation, etc., Since the project cost is reasonably higher than the cost of the project activity, the project cost estimates of the project activity may be considered to be conservative.



## 4. Electricity sales price/kWh=RM0.21

Source: Agreement between TNB and Bell Eco Power ( same project entity) for registered CDM project no 1783 /26/1783 dated 3 June 2008

Appropriateness and means of validation: The validation team perused through the agreement between Tenaga Nasional Berhad (TNB) and project participant and confirmed the value used is valid.

The electricity sale price has been compared with 3 other similar projects in Malaysia and the value is found to be conservative.

No	Name of project	Year of Investment Decision	Sale price	Validation Opinion
1	Bandar Baru Serling Biomass power project (PA1091) – 13MW	2004	RM0.19/kWh	The electricity sale price of this project is lower than that of the sale price considered for the proposed project activity; which is conservative .
2	Kunak Bioenergy project (PA2921) – 14 MW (10MW to grid)	2005	RM0.2125/kWh	The value is very comparable and almost same as that of the proposed project activity.
3	Biomass energy plant at Prolific Yield (PA6384) – 12MW (10 MW to grid)	2009	RM0.21/kWh	The value is exactly the same as that of the proposed project activity.

5. Plant utilization factor: 75% (1<sup>st</sup> year), 80% (2<sup>nd</sup> year), 91.3% 3<sup>rd</sup> year onwards)

Source: Feasibility Studies Report (FSR) provided by the BELL Eco Power Sdn Bhd.dated July 2008 /18/

Appropriateness and means of validation: The validation team was able to confirm that the plant utilization factor is quoted from FSR which is prepared by an engineering company or a third party contracted by the project proponent.

## 6. Income tax = 10 years exemption

Source: Feasibility Studies Report (FSR) provided by the BELL Eco Power Sdn Bhd.dated July 2008 /18/

Appropriateness and means of validation: The validation team noted that the project participant receives an income tax exemption of 10 years due to its pioneer status in the industry.

## 7. Purchase price of electricity = RM 0.35

Source: Tariff by TNB for industries

Appropriateness and means of validation: The validation team has cross checked with publicly available source of document i.e. Tenaga Nasional Berhad Electricity Tariffs & confirmed the value used is valid.

## 8. Quantity of biomass/Boiler fuel consumption = Fibre = 28,500 ton/year; EFB = 37,136 ton/year; Palm Kernel Shell = 15,000 ton/year; wood = 1,800 ton/year.

Source: Feasibility Studies Report (FSR) provided by the BELL Eco Power Sdn



Bhd.dated July 2008 /18/

Appropriateness and means of validation: Cross check biomass requirement for 11MW project in PDD and feasibility study report and found appropriate.

The estimation of quantity of biomass consumed by the project is estimated based on heat input required by the proposed project. The validation has cross-checked the calculation provided in the PDD and found appropriate.

Cost of biomass:

Fibre = RM35/ton; EFB = RM15/ton; Palm Kernel Shell = RM106/ton; wood =RM40/ton. The biomass fuel is expected to procure from its group company Bell Palm Industries Sdn Bhd and some external sources. The validation team has cross-checked fuel supply agreement between Bell Palm Industries Sdn Bhd and Bell Eco Power Sdn Bhd dated 17<sup>th</sup> July 2008 /30/ and quotation from supplier and thus found appropriate. Currently, Bell Palm Industries Sdn Bhd is supplying its biomass to other company and once the project activity is in operation, it will supply its biomass to Bell Eco power Sdn Bhd based on fuel supply agreement signed on 17<sup>th</sup> July 2008. BVCH also cross checked sales invoice slips of the biomass issued by Bell Palm Industries Sdn Bhd to Sincerely Dyeing & Finishing Sdn Bhd, Yong Ting Enterprise, Kok An Enterprise, BP Soon Lee Enterprise, Kah Hwa Industries Sdn Bhd, Tong Tatt Trading and Eng Huat Trading which shows that the biomass price /31/ is deem considered reflects market price. The table below shows the actual cost of biomass supply by Bell Palm Industries Sdn Bhd to other company:

Date of invoice	Invoice To	EFB	Fibre	Palm Kernel Shell
31-03-2008	Sincerely Dyeing & Fishing Sdn Bhd	RM15/ton	-	-
30-05-2008	Yong Ting Enterprise	RM18/ton	-	-
30-05-2008	Sincerely Dyeing & Fishing Sdn Bhd	RM18/ton	-	-
31-07-2008	Kok An Enterprise	-	RM38/ton	-
30-06-2008	BP Soon Lee Enterprise	-	RM37/ton	-
30-04-2008	Kah Hwa Industries Sdn Bhd	-	RM35/ton	-
31-03-2008	Tong Tatt Trading	-	-	RM105/ton
31-05-2008	Eng Huat Trading	-	-	RM115/ton
30-06-2008	Tong Tatt Trading	-	-	RM118/ton
31-07-2008	Eng Huat Trading	-	-	RM120/ton

In addition, the validation also cross-checked the biomass fuel cost in website and the price for biomass fuel are as follows:

Reference to <http://www.carigold.com/portal/forums/showthread.php?t=33612>, PKS price is RM130/ton in April 2008;

Reference to one registered similar project in Malaysia (PA 6384), EFB prices is RM20/ton based on investment decision on 24 September 2009. Thus, the

estimated EFB price of RM15/ton in the PDD is deemed appropriate.

Mesocarp fibre is not a commonly traded commodity and therefore market prices are not readily available publicly. However, as an additional cross check, the prices of mesocarp fibre and EFB were checked on the basis of its calorific value. Based on PKS price of RM106/ ton and a calorific value of 17.3 GJ/ ton, the price works out to about RM6.13/ GJ. Based on this, the price of mesocarp fibre with a calorific value of 11.1 GJ/ ton works out to RM68.01/ton and price of EFB with a calorific value of 5.3 GJ/ton works out to RM32.5/ton. The biomass prices considered by PP are therefore conservative.

Even with PKS price of RM70/ ton which was available at 2005, the price of mesocarp fibre and EFB work out to RM44.91 and RM 21.4/ ton respectively which are still higher than the prices considered in the PDD.

Based on the above assessment, the validation team is in the opinion that the cost of biomass estimated in the PDD is deemed appropriate.

As for the cost of wood residues/chips, the validation team has cross-checked quotation /31/ from external suppliers i.e Tan Lian Heng Timber Sdn Bhd (quotation dated 31-04-2008) and Kilang Kayu Peserai (quotation dated 15-04-2008) which shows that the cost is RM45/ton and RM40/ton respectively. Hence, the estimated cost of RM40/ton for wood residues/chips is deemed reasonable and reflect market price.

9. Operation cost (consists of staff salary, repair and maintenance cost, professional & advisory fee etc) estimated to be = 9 million.  
Source: Feasibility Studies Report (FSR) provided by the BELL Eco Power Sdn Bhd.dated July 2008 /18/  
Appropriateness and means of validation: Cross check the feasibility study report and found appropriate.  
The total operation cost has been compared with 3 other similar projects in Malaysia and the value is found to be conservative.

No	Name of project	Year of Investment Decision	Operating Cost/year	% Difference to the project activity
1	Bandar Baru Serling Biomass power project (PA1091) – 13MW	2004	RM6 million	This value is 33.33% lower than the proposed project activity but it was implemented in year 2004 when the operating costs especially the fuel costs were much lower.
2	Kunak Bioenergy project (PA2921) – 14 MW (10MW to grid)	2005	RM10.8 million	This value is 20.00% higher than the operating costs considered for the proposed project activity and thus the value for the proposed project



				activity is conservative.
3	Biomass energy plant at Prolific Yield (PA6384) – 12MW (10 MW to grid)	2009	RM10 million	This project value is 11.11% higher than the operating costs of proposed project activity and thus the value for the proposed project activity is conservative.

10. Capital allowance = Initial allowance on all assets=20%; Initial allowance on all industrial building=10%; Annual allowance: on plant & machinery=14%; on office equipment=10%; on factory building=3%

Source: Income tax act rules 2000

Appropriateness and means of validation: Cross check the income tax act rules 2000 and found appropriate.

11. Inflationary factor: Inflationary rate per year @ 3%

Source: [http://www.bnm.gov.my/index.php?ch=enpress&pg=en\\_press\\_all&ac=1664&lang=en](http://www.bnm.gov.my/index.php?ch=enpress&pg=en_press_all&ac=1664&lang=en)

Appropriateness and means of validation: As per Renewable energy Power Purchase Agreement policy of Tenaga Nasional Berhad, (TNB), the sole electric utility that can buy electricity, there is no escalation clause for the power purchase tariff and the tariff is fixed for 21 years. Whereas, the operation and maintenance costs would certainly undergo inflation –salaries of staff have to be increased; cost of spares and maintenance will increase etc. Hence, a conservative inflation rate of 3% has been considered for O&M expenses. Bank Negara Malaysia- the central Bank of Malaysia had predicted an inflation rate of 5.5 – 6% for the year 2008 and has also expected to moderate around middle of 2009. Therefore, a conservative value of 3 % has been taken for O&M expenses.

The validation team has cross checked the website & confirmed the value applied in the financial calculation spread sheet is valid & relevant at the time of investment decision was made in year 2010.

The input values used in the financial investment analysis were quoted from the FSR prepared Mirastech and completed in the month of July 2008. The investment decision was made during the month of July. The exact date was on 23 July 2008. A copy of minutes of meeting of investment decision /28/ is provided by project participants for validation. The period of time between finalization of the FSR and the investment decision is considered sufficiently short. As such, BVC can confirm that the input values used in the financial investment analysis are valid and applicable at the time of the investment decision taken by the project proponent and it is unlikely that the input values would have materially changed. BVC has also reviewed the input values and found that the listed input values have been consistently applied in all calculations. Currently, there is no national authority to approve feasibility study report in Malaysia. However, the feasibility study report is prepared by Mirastech Sdn Bhd, a company providing integrated engineering services for turnkey development and power facility maintenance.

The sensitivity analysis showed that the parameters selected are most likely to



fluctuate over time due to external factors (i.e. Investment, technology, and economic). All expenditures incurred will likely be affected by inflation as Malaysia has been experiencing a 3% inflation rate. The sensitivity analysis, done for the analysis period of 20 years covers a range of +10% and -10% as it is deemed appropriate as a plausible range for the project activity since it is only feasible with the revenue from CDM across the investment costs, revenue (export of electricity to the grid) and operating and maintenance (O&M) costs ranges.

The sensitivity analysis showed that the variation  $\pm 10\%$  of uncertain factors could not increase the IRR to cross the benchmark. Furthermore, the validation team concluded that the variation range of uncertainty factors is impossible to be achieved, since:

With a decrease in operation and maintenance cost (including biomass cost) by 10%, the IRR may reach 9.93%. However, it is unlikely to happen as generally operation and maintenance cost are not expected to decrease but increase. Information from Department of Statistics Malaysia shows that consumer price index has kept growing over the years and thus the annual operation and maintenance cost is not likely to decrease.

With a decrease in operation and maintenance cost (excluding biomass cost) by 10%, the IRR is slightly lower than the benchmark. Sensitivity analysis is carrying out for the entire operation and maintenance costs including biomass cost which is not the likely scenario. Since biomass cost is fixed as per the sale agreement and is not likely to fluctuate, the biomass cost has been excluded from the sensitivity analysis. BVCH has cross-checked fuel supply agreement /30/ between Bell Palm Industries Sdn Bhd and Bell Eco Power Sdn Bhd and confirm the agreement is for a period of 21 years from the date of the agreement with fixed rates for the biomass supply. Furthermore, a decrease of 10% for operation and maintenance costs is not likely to happen as generally operation and maintenance cost are likely to increase due to unexpected breakdowns, increased cost of consumables, services etc. This is further confirmed by checking consumer price index from Department of Statistics Malaysia which shows decrease in operation and maintenance cost is not the likely scenario.

The revenues from the project activity without CDM implementation consists of the sale of electricity to the national grid. The project IRR of 2.14% (without CDM, over the analysis period of 10 years) and 6.69% (without CDM, over the analysis period of 20 years), where both of the IRR values are below the benchmark of 8.98% based on commercial lending rates, the project activity will not be attractive. The analysis period of 10 years and 20 years were determined based on the minimum and maximum requirement set by UNFCCC investment analysis guidelines (version 5.0) respectively. However, with the financial assistance through CDM implementation, the project IRR will be attractive and thus will cause the project activity to be feasible (project IRR of 10.45% and 12.73% for 10 years and 20 years respectively) which are deemed to be above the benchmark of 8.98%.

Based on the investment analysis above, it is in the opinion of BVC that without CDM revenue, the project is not feasible as the IRR is below the benchmark set by local



lending financial intermediaries i.e. 8.98%. The project is not the business as usual scenario and it is additional. Hence, the proposed project activity cannot be considered economically and financially viable without revenues generated from the sale of CERs. The investment barrier is the most significant barriers for this project. CDM benefits are required to make the project activity feasible and financially attractive.

The DOE, based on the assessment result by the financial expert engaged, hereby confirms that the underlying assumptions are appropriate and the financial calculations are correct.

### 3.7.4 Barrier analysis (118)

The steps taken to assess the relevant information contained in the PDD against each barrier are described below.

As explained in section 3.7, the project participants have used investment barrier to demonstrate additionality. Based on the result of this assessment, it clearly shows that the barrier presented in the PDD can be considered real and would prevent the implementation of the project activity but not the implementation of at least the baseline of the project (Details please refer to section 3.7.3 of the validation report).

The DOE hereby confirms that the barrier analysis performed is credible.

### 3.7.5 Common practice analysis (121)

Not mandatory for small scale CDM project.

## 3.8 Monitoring plan (124)

The DOE hereby confirms that the monitoring plan complies with the requirements of the methodology.

The steps taken to assess whether the monitoring arrangements described in the monitoring plan are feasible within the project design are described below.

Determination of the baseline project parameters are explained in section 3.6.4 and found acceptable and in accordance to methodology AMS ID version 17.

As for parameters monitored ex-post, the parameters, their monitoring methods, frequencies and measurement equipment are acceptable and in line to methodology AMS ID version 17.

The parameters identified to be monitored ex-post were:

- (i) CO<sub>2</sub> emission factor of the grid,  $EF_{CO_2,y}$
- (ii) Quantity of net electricity supplied to the grid,  $EG_{actual,y}$
- (iii) Electricity imported from the grid by the project activity,  $E_{imp}$
- (iv) Quantity of mesocarp fibre used in the project activity,  $Q_{MF,y}$
- (v) Quantity of palm kernel shell used in the project activity,  $Q_{PKS,y}$
- (vi) Quantity of EFB used in the project activity,  $Q_{EFB}$





- (vii) Quantity of wood biomass used in the project activity,  $Q_{WOOD}$
- (viii) Round trip distance (from and to) between biomass, source sites and the project activity,  $AVD_Y$
- (ix) Average  $CO_2$  emission factor for the trucks during the year  $y$   $EF_{km,CO_2,y}$  – measurement of the fuel type, fuel consumption and distance travelled for all truck types will be conducted once in a year.
- (x) Moisture content of mesocarp fibre,  $W_{MESOCARP}$
- (xi) Moisture content of palm kernel shell,  $W_{PKS}$
- (xii) Moisture content of EFB,  $W_{EFB}$
- (xiii) Moisture content of wood residues,  $W_{wood}$
- (xiv) Net calorific value of mesocarp fibres,  $NCV_{mesocarp}$
- (xv) Net calorific value of PKS,  $NCV_{PKS}$
- (xvi) Net calorific value of EFB,  $NCV_{EFB}$
- (xvii) Net calorific value of wood,  $NCV_{wood}$

The excess biogas from the methane recovery system being installed in the palm oil mill (PA 1783) will not be used as fuel in the current project activity due to monitoring issues and other complications. As such, the biogas flow has not been included as a monitoring parameter.

The validation team has assessed the proposed monitoring plan for the proposed project activity. The monitoring plan will cover:

- (i) Parameters to be monitored and how the data will be collected;
- (ii) The equipment to be used in order to carry out monitoring;
- (iii) Operational procedures and quality assurance responsibilities;
- (iv) Operational management structure.

The plant would be operated by operators certified by Department of Health and Safety. At the end of each month, the electricity exported to the grid of TNB would be recorded by the representative of TNB and project proponents for billing purpose and would serve as the basis for the calculation of baseline emissions.

Equipment use in the project activity requires calibrations are weighbridge and electricity meter. The frequency and justification of the frequency of calibration are as follows:

No	Equipment	Frequency of Calibration
1	Electricity meter	As per manufacture standards
2	Weighbridge	As per manufacture standards

The project activity does not result in any leakages as the boiler is new and not transferred from another project activity.

The validation team has also reviewed the operational and management structure for monitoring the project activity. All the data would be saved electronically for full crediting period, plus two years.



The DOE hereby confirms that the project participants are able to implement the monitoring plan.

### **3.9 Sustainable development (127)**

The host Party's DNA confirmed the contribution of the project to the sustainable development of the host Party. Refer to item 3.1 of this report.

### **3.10 Local stakeholder consultation (130)**

The steps taken to assess the adequacy of the local stakeholder consultation are described below.

Project proponent held a local stakeholder meeting on 28<sup>th</sup> August 2008 at the project proponent premises at Parit Ju in Batu Pahat. Letter of invitation were sent to various organizations and local community. Advertisement was published in newspaper, "The Star" on 21 August 2008 to invite the local public to attend the meeting. Generally, the stakeholders who attended the meeting expressed their satisfaction towards implementation of proposed biomass project.

The DOE hereby confirms that the process of local stakeholder consultation is observed to be adequate.

### **3.11 Environmental impacts (133)**

Under Malaysian Environmental Quality (Environmental impact assessment) (Prescribed Activities) order 1987, the project is not required to carry out an Environmental impact assessment, only the installation of a boiler with stack emission will require permission from Department of Environment Malaysia and Project proponent has obtained the necessary written approval.

Although not required by law to undertake environmental impact assessment, the project participants has undertaken an analysis of environmental impacts and concluded that the impact from the project activity is not significant.

## **4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS**

The PDD using methodology version 13 was webhosted on the UNFCCC for global stakeholders comments as per CDM requirements. The project was webhosted from 17 June 2009 to 16 July 2009.

No comments were received. The project participant provided response to these comments. Validation team took due account of these comments and the respective responses while making the validation opinion. The details of the comments received, responses by the project participant/s and the explanation of how due account of these is taken by the validation team are attached as Appendix B with this validation report.





## 5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the Biomass based power plant in Batu Pahat in Johor State, Malaysia project in Malaysia. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

Project participants apply the attachment A to Appendix B of the simplified modalities and procedures for small scale CDM project activities to demonstrate additionality. In line with this procedure, the PDD provides analysis of investment and other barriers to determine that the project activity itself is not the baseline scenario.

By synthetic description of the project, the project is likely to result in reductions of GHG emissions partially. An analysis of the investment and other barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The review of the project design documentation (version 3.1) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria. Bureau Veritas Certification thus requests registration of 'Biomass based power plant in Batu Pahat in Johor State, Malaysia' as CDM project activity.



## 6 REFERENCES

### Category 1 Documents:

Documents provided by Bell Ecopower Sdn Bhd that relate directly to the GHG components of the project.

- /1/ PDD version 01 dated 10/01/2009 – GSP
- /2/ PDD version 4.0 dated 03/01/2013.
- /3/ Emission reductions excel spreadsheet calculation.
- /4/ Financial investment analysis excel spreadsheet.
- /5/ Sensitivity analysis for electricity export.
- /6/ Sensitivity analysis for investment cost.
- /7/ Sensitivity analysis for operating cost.
- /8/ LoA DNA Malaysia.
- /9/ LoA DNA Japan.
- /10/ LoA DAN Japan in English version.
- /11/ National energy balance 2007 – installed capacity
- /12/ Study on grid connected electricity baselines in Malaysia December 2008.
- /13/ Bank Negara annual report 2009.
- /14/ Bank pembangunan brochure.
- /15/ Renewable energy resources February 2005.
- /16/ 9<sup>th</sup> Malaysia plan 2006-2010 renewal energy.
- /17/ National energy balance 2007
- /18/ Feasibility study report. July 2008
- /19/ National default value national energy balance 2005.
- /20/ Notification to UNFCCC.
- /21/ Notification to DNA Malaysia.
- /22/ Acknowledgement from UNFCCC.
- /23/ CDM consultancy contract.
- /24/ Ministry of Energy, Water and Communications Malaysia approval
- /25/ Map showing the mills around the project activity
- /26/ Power purchase agreement TNB and Bell Ecopower Sdn Bhd for registered CDM project no 1783 dated 3 June 2008.
- /27/ Department of Environmental approval for mill capacity increase for Bell Palm Industries Sdn Bhd
- /28/ CDM Investment decision dated 23 July 2008.
- /29/ Purchase order for boiler
- /30/ Fuel purchase agreement
- /31/ Biomass Invoices and quotation

**Category 2 Documents:**

Background documents related to the design and/or methodologies employed in the design or other reference documents.

- /32/ Validation and Verification Manual Version 01.2
- /33/ Guidance on Investment Analysis- Version 5
- /34/ AMS.I.D version 17
- /35/ Guidance on the demonstration and assessment of prior consideration of the CDM Version 03 EB 49 Annex 22.
- /36/ Glossary of CDM terms Version 0
- /37/ Guidance on assessment of debundling for SSC project activities, version 3 (EB54 Annex 13)
- /38/ The Guidelines for Completing SSC-CDM-PDD, – Ver.05 .2 dated 14 /09/2007
- /39/ Indicative Simplified Baseline and Monitoring Methodologies for Selected Small- Scale CDM Project Activity Categories Version 12 (EB 41 Annex 20)
- /40/ Simplified modalities and procedures for small scale CDM project activities.
- /41/ Methodological Tool “Tool to calculate the emission factor for an electricity system. Version 02 (EB 54 Annex 14)
- /42/ Tool to determine remaining lifetime of equipment version 1 EB 50 Annex 15.
- /43/ Attachment C to Appendix B – indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories – General guidance on leakage in biomass project activities (EB 47, Annex 28)
- /44/ Guidelines for the reporting and validation of plant load factors (EB48 Annex 11).
- /45/ Tool to calculate baseline, project and/or leakage emissions from electricity consumption, version 01.



**Persons interviewed:**

List persons interviewed during the validation or persons that contributed with other information that are not included in the documents listed above.

- |     |                     |   |
|-----|---------------------|---|
| /1/ | Bala Subramaniam    | (Project Manager Bell Ecopower Sdn.Bhd) |
| /2/ | Hou Wan Hoo         | (General Manager Bell Ecopower)         |
| /3/ | Andrew Chiew Y.C    | (Director Palm supplier)                |
| /4/ | A.Karim Bin Masrom  | (Villager Tempaian village)             |
| /5/ | Ilango S.Barathi G. | (Senior Manager YTL SV Carbon Sdn.Bhd.) |

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## 7 CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS

### **Ram Madhukar Desai (Lead Verifier)**

Environmental Engineer with over all 13 years of experience in various industries related to Water & Waste water engineering design, installation & Commissioning, Integrated Facility Management for Environmental Services operations in various industries i.e Automotive, Pharmaceutical , IT & Electronics (With Clean Room).

Management System Implementation and Maintenance, Green Building concept implementation, Lean Management Implementation, Water & Waste Water engineering Design & project Management, Project Environmental Compliance etc. for a construction company.

He is the lead auditor for Environment management system, Quality management system and Occupational health and safety management system and his auditing experience spans for 3 year with BVCI & BVCS. He has undergone intensive training on Clean Development Mechanism and was trained as Lead Verifier for CDM in the year 2005 and working as a lead Verifier for validation and verification of CDM/VCS projects

### **Toh Ket Tiong (Verifier)**

He holds a Master Degree in Environmental Technology and Management from Asian Institute of Technology, Bangkok, Thailand. Before joining BVC in year 2004, he works as environmental consultant for more than 10 years. He obtained the certificate of CDM Lead Verifier, Lead Auditor for ISO 14001, ISO 9001 and OHSAS 18001, MS 1722

### **Tony Li Xingtong (Technical Specialist)**

He holds a Master Degree in Landscape Ecology and Bachelor Degree in Environmental Engineering. Before joining BV in 2009, he gained 1 year of CDM technical experience in P.R. China. He obtained the certificate of CDM verifier, Lead Auditor for ISO 14001. He completed the course assessment for the ISO 14064:2006.

### **H B Muralidhar (Internal Technical Reviewer)**

Lead auditor in Bureau Veritas Certification for Environment Management System, Quality Management System and Occupational Health and Safety Management System. Graduate in Electrical Engineering with 25 years of experience power generation and distribution related fields as well as in management system auditing. He is the Lead auditor for Environmental Management System, Quality Management system and Occupational Health and Safety Management System. He has undergone intensive training on Clean Development Mechanism. He is the technical expert & conducted Validation / Verification for more than 50 CDM Projects.

**Financial Specialist - Matthew Tang Zhong Zheng**

Senior Audit in Deloitte KassimChan. He graduated from Curtin Universtiy, Australia with a B. Commerce degree majoring in Accounting and Finance. He is currently pursuing his studies in ICAEW (Institute of Chartered Accountants in England and Wales) at Professional stage. He has 4 years of working experience in audit specifically in both public listed and non-public listed companies in Trading, Manufacturing, Construction, and Property Development. His roles and responsibilities includes audit planning, reviewing on computation of tax, reporting for MNC companies and drafting financial reports.

**Second Financial Specialist – CA.G.N,Jayaram**

By virtue of extensive accounting experience for over two and a half decaades, well versed with the local accounting and tax laws, Accounting Standards prescribed by The Institute of Chartered Accountants of India, The Indian Income Tax Act 1961 and the GAAP. Has appraised over 50 CDM projects for financial additionality on behalf of CDM validators of repute.

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## VALIDATION REPORT

## APPENDIX A: BELL ECOPOWER SDN BHD CDM PROJECT VALIDATION PROTOCOL

Table 1 Validation requirements based on the Clean Development Mechanism Validation and Verification Manual (Version 01.2) and methodology AMS I.D (version 17) - "Grid connected renewable electricity generation"

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
<b>1. Approval</b>			<b>COUNTRY A (Malaysia)</b>	<b>COUNTRY B (Japan)</b>		
a. Have all Parties involved approved the project activity?	VVM	44	<b>CAR 1 LoA from DNA Malaysia provided</b>	<b>CAR 1 LoA from DNA Japan not provided</b>	<b>CAR-1</b>	OK
b. Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval? (If yes, provide the reference of the letter of approval, any supporting documentation, and specify if the letter was received from the project participant or directly from the DNA)	VVM	45	Pending CAR 1	Pending CAR 1	<b>CAR-1</b>	OK
c. Does the letter of approval from DNA of each Party involved:	VVM	45	-	-	-	-
i. confirm that the Party is a Party of the Kyoto Protocol?	VVM	45.a	Pending CAR 1	Pending CAR 1	<b>CAR-1</b>	OK
ii. confirm that participation is voluntary?	VVM	45.b	Pending CAR 1	Pending CAR 1	<b>CAR-1</b>	OK
iii. confirm that, in the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country?	VVM	45.c	Pending CAR 1	NA	<b>CAR-1</b>	OK
iv. Refers to the precise proposed CDM project activity title in the PDD being submitted for registration?	VVM	45.d	Pending CAR 1	Pending CAR 1	<b>CAR-1</b>	OK



## VALIDATION REPORT

d. Is(are) the letter(s) of approval unconditional with respect to (i) to (iv) above?	VVM	46	Pending CAR 1	Pending CAR 1	<del>CAR 1</del>	OK
e. Has(ve) the letter(s) of approval been issued by the respective Party's designated national authority (DNA) and is valid for the CDM project activity under validation?	VVM	47	Pending CAR 1	Pending CAR 1	<del>CAR 1</del>	OK
f. Is there doubt with respect to the authenticity of the letter of approval?	VVM	48	Pending CAR 1	Pending CAR 1	<del>CAR 1</del>	OK
g. If yes, was verified with the DNA that the letter of approval is authentic?	VVM	48	Pending CAR 1	Pending CAR 1	<del>CAR 1</del>	OK
<b>2. Participation</b>			<i>PP1(BELL Ecopower Sdn Bhd)</i>	<i>PP2 (Marubeni Corporation)</i>		
a. Have all project participants been listed in a consistent manner in the project documentation?	VVM	51	Yes.	Yes.	OK	OK
b. Has the participation of the project participants in the project activity been approved by a Party to the Kyoto Protocol?	VVM	51	Yes. Malaysia has ratified the Kyoto Protocol on 04/09/2002. Refer to <a href="http://maindb.unfccc.int/public/country.pl?country=MY">http://maindb.unfccc.int/public/country.pl?country=MY</a>	Yes, Japan has ratified the Kyoto Protocol on 04/06/2002. Refer to <a href="http://maindb.unfccc.int/public/country.pl?country=JP">http://maindb.unfccc.int/public/country.pl?country=JP</a>	OK	OK
c. Are the project participants listed in tabular form in section A.3 of the PDD?	VVM	52	Yes.	Yes.	OK	OK
d. Is the information in section A.3 consistent with the contact details provided in annex 1 of the PDD?	VVM	52	Yes.	Yes.	OK	OK
e. Has the participation of each of the project participants been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve	VVM	52	Pending CAR 1	Pending CAR 1	<del>CAR 1</del>	OK





## VALIDATION REPORT

participation? (Provide reference of the approval document for each of the project participants)						
f. Are any entities other than those approved as project participants included in these sections of the PDD?	VVM	52	No		OK	OK
g. Has the approval of participation issued from the relevant DNA?	VVM	53	Pending CAR 1.	Pending CAR 1.	<b>CAR-1</b>	OK
h. Is there doubt with respect to (g) above? L	VVM	53	Pending CAR 1.	Pending CAR 1.	<b>CAR-1</b>	OK
i. If yes, was verified with the DNA that the approval of participation is valid for the proposed project participant?	VVM	53	Pending CAR 1.	Pending CAR 1.	<b>CAR-1</b>	OK
<b>3. Project design document</b>						
a. Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website?	VVM	55	Yes. PDD template version 03 in effect as of 22 December 2006 is used.  Guidelines for completing CDM-SSC-PDD version 5 dated 14/09/2007.		OK	OK



## VALIDATION REPORT

a. Is the PDD in accordance with the applicable CDM requirements for completing the PDD?	VVM	56	Yes. First on site visit was done on 05/08/2009. Second on site visit with technical specialist was done on 01/06/2011.	OK	OK
b. In CDM-SSC-PDD section A.1 are following provided?	EB 34	Ann 09			
i. Title of project	EB 34	Ann 09	Yes. Title of project - Biomass based power plant in Batu Pahat in Johor State, Malaysia	OK	OK
ii. Current version number and date of document	EB 34	Ann 09	GSP (17 June – 16 July 2009) : version number –1 Date of document – 10/01/2009  Current version number – 4.0 Date of document – 03-01-2013	OK	OK
c. In CDM-SSC-PDD section A.2 are following provided (max. one page)?	EB 34	Ann 09			
i. A brief description of the project activity covering purpose which includes the scenario existing prior to the start of project, present scenario and baseline	EB 34	Ann 09	The project activity involved construction of a newly Biomass based power plant by Bell Ecopower Sdn Bhd with capacity of 11 MW. Electricity generated would be exported to the national grid of Tenaga Nasional Berhad (TNB).  The new power plant consisting of a 52 tons per hours boiler and a turbine utilizing biomass residues from palm oil mill mainly from its group company Bell Palm Industries Sdn Bhd and wood chips from nearby sawmill. The annual electricity generated supplied to the grid would be 775,780 MWh during the crediting period of 10 years.		



## VALIDATION REPORT

		<p>Presently, Bell Palm Industries Sdn Bhd or BPI is operates a palm oil mill with capacity of 60 ton/hours and propose to increase its capacity to 500,000 tons of FFB/year.</p> <p><b>CL 1</b> Page 3 of the PDD stated BPI operates a palm oil mill and proposes to enhance the processing capacity to process about 500,000 tons of FFB.year. Please provide approval letter from Department of Environment and what is that capacity of the palm oil mill now.</p> <p><b>CL 2</b> As per the definition of Annex 18, EB23, please further clarify the fuel is the renewable biomass, especially for the woods and biogas.</p>	<b>CL-1</b>	OK
			<b>CL-2</b>	OK



## VALIDATION REPORT

ii. Explanation how the GHG emission reductions are effected	EB 34	Ann 09	Yes. Currently, about 94% of electricity generation in Peninsular grid is from fossil fuel. As such, electricity supply by the proposed biomass power plant to the TNB grid would displace equivalent amount of electricity supplied by fossil fuel based sources and associated CO <sub>2</sub> emission.	OK	OK
iii. The PP's view on the contribution of project activity to sustainable development	EB 34	Ann 09	Yes. The contribution of project activity to sustainable development is included in Section A.2 of the PDD: (a) Reducing GHG emissions; (b) Create new job opportunities; (c) Promote the use of renewable energy; (d) Reducing import of fossil fuel and thus contribute to the saving in foreign exchange; (e) Little negative impact on the environment.	OK	OK
iv. Are there any changes/modifications compared to the webhosted PDD?	EB 34	Ann 09	No. Changes are due to revise methodology from version 13 to version 17.	OK	OK
e. In CDM-SSC-PDD section A.3 are following provided in the tabular format?	EB 34	Ann 09	-	-	-
i. List of project participants and Party(ies)	EB 34	Ann 09	Yes.  The private entities involved in the project activity are listed at section A.3 of the PDD. Host party (Malaysia): Private entity: Bell Ecopower Sdn Bhd. Japan; Private entity: Marubeni Corporation	OK	OK



## VALIDATION REPORT

ii. Identification of host party	EB 34	Ann 09	Yes, Malaysia is the host party.	OK	OK
iii. Indication whether the Party wishes to be considered as project participant	EB 34	Ann 09	Not considered as project participant.	OK	OK
f. In CDM-SSC-PDD section A.4.1 are following provided?	EB 34	Ann 09	-	-	-
i. Technical description, location, host party(ies) and address as required?	EB 34	Ann 09	Yes. The project activity is located in Lot no. 4960, Parit Ju, Simpang Kiri, 83000 Batu Pahat in Johor state in Malaysia.	OK	OK
ii. Detailed physical location with unique identification of the project activity (eg. Longitude/latitude) – not to exceed one page	EB 34	Ann 09	The geographical coordinates is north latitude 1°51' N and east longitude 102°56' E.	OK	OK
iii. Are there any changes/modifications compared to the webhosted PDD?	EB 34	Ann 09	No. Changes are due to revise methodology from version 13 to version 17.	OK	OK
g. In CDM-SSC-PDD section A.4.2 are following provided	EB 34	Ann 09	-	-	-
i. the list of categories of project activities as per the latest categorization of Appendix B to the simplified modalities and procedures for small-scale CDM project activities, hereafter referred to as Appendix B. (refer <a href="http://cdm.unfccc.int/methodologies/SSCmethodologies">http://cdm.unfccc.int/methodologies/SSCmethodologies</a> )	EB 34	Ann 09	Scope 1 energy Industries (Renewable Sources)	OK	OK



## VALIDATION REPORT

ii. A description of how environmentally safe and sound technology and know how is being applied by the project activity interalia technology transfer to the Host Party(ies) for application in the project activity	EB 34	Ann 09	<p>The technology is an environmentally safe technology and The project activity does not have any significant impact on air, water and land.</p> <p><b>CL 3</b> <b>PDD has not described the sound technology transferred to the host party</b></p> <p><b>CL 4</b> <b>Please provide the Plant Load Factor (PLF) of the Project and its data source should be indicated.</b></p>	CL-3	OK
h. In CDM-SSC-PDD section A.4.3 is the estimation of emission reductions provided, as requested, in a tabular format?	EB 34	Ann 09	<p>Yes. Fixed crediting period of 10 years was chosen.</p> <p>Annual average emission reductions of 52,456 tCO<sub>2</sub>e is estimated for the 10 years crediting period.</p>	OK	OK



## VALIDATION REPORT

i. In CDM-SSC-PDD section A.4.4 is information regarding Public funding provided?	EB 34	Ann 09	Yes, The project activity does not involve public funding from Annex I parties.	OK	OK
j. In CDM-SSC-PDD section A.4.5 are following provided?	EB 34	Ann 09	-	-	-
i Confirmation that the small-scale project activity is not a debundled component of a larger project activity.	EB 34	Ann 09	The project activity is not a debundled component of a larger project activity	OK	OK
ii. Indication if there is a registered small-scale project activity under the CDM or an application to register another small-scale project activity under the CDM	EB 34	Ann 09	Yes. There project proponent have a registered CDM small scale project activity – Project no. 1783 “Methane capture from POME for electricity generation in Batu Pahat	OK	OK
a. With the same project participants	EB 34	Ann 09	Yes, the same project participants	OK	OK
b. Registered within the period of 2 years	EB 34	Ann 09	Yes	OK	OK
c. Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity under the CDM at the closest point.	EB 34	Ann 09	The registered project is within 1km of the project boundary of the proposed small scale activity under the CDM at the closet point. However, it is not a debundled componet of a larger project activity as it is the same project category and not the same technology/measure.	OK	OK
iii. Are there any changes/modifications compared to the webhosted PDD?	EB 34	Ann 09	No. Changes are due to revise methodology from version 13 to version 17.	OK	OK





## VALIDATION REPORT

k. In CDM-SSC-PDD section B.1 is the approved baseline and monitoring methodology and version no provided?	EB 34	Ann 09	Yes. The approved baseline and monitoring methodology is AMS 1.D: Grid connected renewable electricity generation, version 17.	OK	OK
l. In CDM-SSC-PDD section B.2 are the following provided?	EB 34	Ann 09	-	-	-
i. Justification of the choice of project activity and category?	EB 34	Ann 09	<p>Yes. The justification of the choice of project category and category are provided in PDD A.4.2.</p> <p>The project is a new installation renewable energy generation unit based on renewable biomass source. The generated electricity is exported to TNB grid.</p> <p>Only renewable biomass such as palm oil mill biomass residues and wood chip wastes would be used in the project activity.</p> <p>Total installed capacity of the project activity is 11 MW and less than 15 MW.</p>	OK	OK
ii. Demonstration that the project activity qualifies as a small-scale project activity and that it will remain under the limits of small-scale project activity types during every year of the crediting period as per the following: For Type I : the capacity of the proposed project activity will not exceed 15 MW (or an appropriate equivalent); For Type II: the annual energy savings on account of efficiency improvements will not exceed 60 GWh (or an appropriate equivalent) in any year of the crediting period; For Type III: the	EB 34	Ann 09	Yes, the project activity qualifies as a small-scale project, type 1 category. Total installed capacity of the project activity is 11 MW which does not exceed 15 MW.	OK	OK



## VALIDATION REPORT

estimated emission reductions of the project activity will not exceed 60 ktCO <sub>2</sub> e in any year of the crediting period.					
m. In CDM-SSC-PDD section B.3 is the project boundary of the project activity, based on the guidance of the applicable project category, provided?	EB 34	Ann 09	Yes. As per paragraph 9 of the methodology, the physical, geographical site of the renewable generation source delineates the project boundary.  For the project activity, the project boundary is the power house.	OK	OK
n. In CDM-SSC-PDD section B.4 are following provided?	EB 34	Ann 09	-	-	-
i. The baseline for the proposed project activity with reference to the chosen project category	EB 34	Ann 09	As per paragraph 10 of AMS.I.D, the baseline of the proposed project activity is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid connected power plants and by the addition of new generation sources.	OK	OK
ii. Justification of key assumptions and rationales	EB 34	Ann 09	Grid emission factor can be calculated by: (a) Combined margin method based on "Tool to calculate the emission factor for an electricity system" and (b) The weighted average emission of the current generation mix. As per baseline study by PTM, in December 2008, emission factor as per option (a) and (b) are 0.684 and 0.695 tonCO <sub>2</sub> e/Mwh respectively. Value of 0.684 is chosen because this is conservative value.	OK	OK



## VALIDATION REPORT

iii. Transparent illustration of all data used to determine the baseline emissions (variables, parameters, data sources etc)	EB 34	Ann 09	$BE_y = EG_{BL,y} * EF_{CO2, grid,y}$ $EG_{BL,y}$ = quantity of net electricity supplied to the grid as a result of the implementation of the CDM Project activity in year y. $EF_{CO2, grid,y}$ is CO <sub>2</sub> emission factor of the grid in year y The source of emission factor data is from baseline study conducted by PTM in December 2008.		
iv. Are there any changes/modifications compared to the webhosted PDD?	EB 34	Ann 09	No. Changes are due to revise methodology from version 13 to version 17.	OK	OK
o. In CDM-SSC-PDD section B.5 are following provided?	EB 34	Ann 09	-	-	-
i. Explanation that the proposed project activity is additional as per options provided under attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities	EB 34	Ann 09	Yes. The barriers face by the project activity is as below: (i) Investment barrier	OK	OK
ii. National policies and circumstances relevant to the baseline of the proposed project activity	EB 34	Ann 09	Yes. Currently, there is no open market for the sale of electricity by independent power plant. TNB is the monopoly purchaser of electricity generated by the generating companies in Malaysia. The proposed project activity has been approved by the Department of Environment Johor.	OK	OK
iii. Evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity, if the starting date of the project activity is before the date of validation. (this is part of the large scale project guidelines. It is better to be retained)	EB 34	Ann 09	<b>CL 5</b> <b>Please provide evidence that CDM was seriously considered in the decision to proceed with the project activity.</b>	<b>CL-5</b>	OK



## VALIDATION REPORT

p. In CDM-SSC-PDD section B.6.1 are following provided?	EB 34	Ann 09			
i. Explanation on how the procedures, in the approved project category to calculate project emissions, baseline emissions, leakage emissions and emission reductions are applied to the proposed project activity.	EB 34	Ann 09	Yes. Section B 6.1 explains how to calculate project emissions, baseline emissions, leakage emissions and emission reductions.	OK	OK
ii. Clearly stating of which equations will be used in calculating emission reductions.	EB 34	Ann 09	Yes. Section B 6.1 clearly stating equations used in calculating emission reductions.	OK	OK
iii. Explanation and justification of all relevant methodological choices, including: where the category provides different options to choose from; where the category provides for different default values	EB 34	Ann 09	N/A.	OK	OK
q. In CDM-SSC-PDD section B.6.2 are following provided?	EB 34	Ann 09	-	-	-
1. A compilation of information on the data and parameters that are not monitored but determined upfront so as to be available for validation	EB 34	Ann 09	Yes. Parameters determined ex ante for the project are: (i) Installed capacity of the project activity. (ii) Emission factor of the peninsular grid. (iii) Specific fuel consumption of mesocarp fibre. (iv) Specific fuel consumption of PKS. (v) Specific fuel consumption of EFB. (vi) Specific fuel consumption of wood chips. (vii) Average technical transmission and distribution losses in the grid.	OK	OK



## VALIDATION REPORT

2. The actual value applied	EB 34	Ann 09	The actual value applied:	OK	OK														
			<table><tr><td><i>Parameters</i></td><td><i>Actual value</i></td></tr><tr><td><i>Installed capacity of the project activity.</i></td><td><b>11MW</b></td></tr><tr><td><i>Emission factor of the peninsular grid.</i></td><td><b>0.684</b></td></tr><tr><td><i>Specific fuel consumption of mesocarp fibre.</i></td><td><b>1.411</b></td></tr><tr><td><i>Specific fuel consumption of PKS</i></td><td><b>0.905</b></td></tr><tr><td><i>Specific fuel consumption of EFB</i></td><td><b>1.780</b></td></tr><tr><td><i>Specific fuel consumption of wood chip</i></td><td><b>1.566</b></td></tr></table>	<i>Parameters</i>	<i>Actual value</i>	<i>Installed capacity of the project activity.</i>	<b>11MW</b>	<i>Emission factor of the peninsular grid.</i>	<b>0.684</b>	<i>Specific fuel consumption of mesocarp fibre.</i>	<b>1.411</b>	<i>Specific fuel consumption of PKS</i>	<b>0.905</b>	<i>Specific fuel consumption of EFB</i>	<b>1.780</b>	<i>Specific fuel consumption of wood chip</i>	<b>1.566</b>		
<i>Parameters</i>	<i>Actual value</i>																		
<i>Installed capacity of the project activity.</i>	<b>11MW</b>																		
<i>Emission factor of the peninsular grid.</i>	<b>0.684</b>																		
<i>Specific fuel consumption of mesocarp fibre.</i>	<b>1.411</b>																		
<i>Specific fuel consumption of PKS</i>	<b>0.905</b>																		
<i>Specific fuel consumption of EFB</i>	<b>1.780</b>																		
<i>Specific fuel consumption of wood chip</i>	<b>1.566</b>																		



## VALIDATION REPORT

3. Explanation and justification for the choice of the source of data	EB 34	Ann 09	<p>Source of data for installed capacity of the project activity – project installed capacity.</p> <p>Source of data for emission factor of the peninsular grid is from: Study on Grid connected Electricity Baselines in Malaysia, prepared by CDM Energy Secretariat, Pusat Tenaga Malaysia (PTM-Malaysian Energy Centre), published in January, 2008..</p> <p>Source of data for specific fuel consumption of mesocarp fibre, PKS, EFB and wood chips is calculated based on the calorific value of the fuel and operating parameters of the boiler and turbine.</p>	OK	OK
4. Clear and transparent references or additional documentation in Annex 3	EB 34	Ann 09	Yes. Additional documentation in Annex 3.	OK	OK
5. Where values have been measured, a description of the measurement methods and procedures (e.g. which standards have been used), indicated the responsible person/entity having undertaken the measurement, the date of measurement(s) and the measurement results	EB 34	Ann 09	Not applicable in this case as the emission factor is determined ex-ante as per the options in emission factor by CDM Energy Secretariat, Pusat Tenaga Malaysia (PTM-Malaysian Energy Centre), published in December, 2008.	OK	OK



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r. In CDM-SSC-PDD section B.6.3 are following provided?	EB 34	Ann 09	-	-	-
i. A transparent ex ante calculation of project emissions, baseline emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations provided in the approved methodology	EB 34	Ann 09	Yes. A transparent baseline emission and project emission calculation are provided in section B 6.3. No leakage emissions.	OK	OK
ii. Documentation how each equation is applied, in a manner that enables the reader to reproduce the calculation	EB 34	Ann 09	Yes. The emission reduction calculation excel spreadsheet have been provided and has been checked and found appropriate.	OK	OK
iii. Additional background information and or data in Annex 3, including relevant electronic files (i.e. spreadsheets)	EB 34	Ann 09	Yes.	OK	OK
iv. Emission reduction calculations for each component are provided separately if more than one component activity is applied	EB 34	Ann 09	Yes, emission reduction calculations for each of the component have been provided separately in transparent manner.	OK	OK
s. In CDM-SSC-PDD section B.6.4 are the results of the ex ante estimation of emission reductions for all years of the crediting period, in a tabular format, provided?	EB 34	Ann 09	Yes, ex ante estimation of emission reductions from year 1 to year 10 is provided in a tabular format.	OK	OK
t. In CDM-SSC-PDD section B.7.1 are following provided?	EB 34	Ann 09	-	-	-
i. Specific information on how the data and parameters that need to be monitored would actually be collected during monitoring for the project activity	EB 34	Ann 09	Yes.	OK	OK





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ii. For each below parameter the following information, using the table provided:	EB 34	Ann 09	-	-	-
a. The source(s) of data that will be actually used for the proposed project activity (e.g. which exact national statistics). Where several sources may be used, explain and justify which data sources should be preferred	EB 34	Ann 09	N/A..	OK	OK
b. Where data or parameters are supposed to be measured, specify the measurement methods and procedures, including a specification which accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method, who is the responsible person/entity that should undertake the measurements and what is the measurement interval; (i) A description of the QA/QC procedures (if any) that should be applied; (ii) Where relevant: any further comment. Provide any relevant further background documentation in Annex 4.	EB 34	Ann 09	Yes.	OK	OK
i. A detailed description of the monitoring plan.	EB 34	Ann 09	-	-	-
a. The operational and management structure that the project operator will implement in order to monitor emission reductions and	EB 34	Ann 09	Yes.	OK	OK



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any leakage effects generated by the project activity						
b. These responsibilities for and institutional arrangements for data collection and archiving	EB 34	Ann 09	Yes. The management structure of the CDM monitoring involves plant operators, chargeman, electrical engineer and general manager.	OK	OK	
c. Does the monitoring plan reflect good monitoring practice appropriate to the type of project activity	EB 34	Ann 09	Yes, the monitoring plan reflect good monitoring practice and appropriate to the type of project activity.	OK	OK	
d. Relevant further background information in Annex 4	EB 34	Ann 09	Yes	OK	OK	
u. In CDM-SSC-PDD section B.8 are following provided	EB 34	Ann 09	-	-	-	
i. Date of completion of the application of the methodology to the project activity study in DD/MM/YYYY	EB 34	Ann 09	Date of completion of the baseline section is 28/01/2009	OK	OK	
ii. Contact information of the person(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity	EB 34	Ann 09	Yes, Illango S Bharathi G. YTL SV Carbon Sdn. Bhd. 50250 Kuala Lumpur, Malaysia	OK	OK	
iii. Indicated if the person/entity is also a project participant listed in Annex 1	EB 34	Ann 09	No, the person indicated is not a project participant	OK	OK	
v. In CDM-SSC-PDD section C.1.1 are following provided?	EB 34	Ann 09	-	-	-	
i. The starting date of a CDM project activity is the earliest of the date(s) on which the implementation or construction or real action of a project activity begins/has begun (EB33, Para 76/CDM Glossary of terms/EB41, Para 67)	EB 34	Ann 09	Yes, the starting date of the project activity is 24/11/2008. The date of purchase contract with the boiler supplier of the project activity is the starting date of the project activity.	OK	OK	
ii. A description of how this start date has been determined, and a description of the evidence	EB 34	Ann 09	The date of purchase contract with the boiler supplier of the project activity is considered as	OK	OK	



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available to support this start date			the starting date of the project activity.		
iii. If this starting date is earlier than the date of publication of the CDM-SSC-PDD for global stakeholder consultation by a DOE, does Section B.5 above contain a description of how the benefits of the CDM were seriously considered prior to the starting date (EB41, Para 68).? (though this is in guideline for large scale projects, it is advisable to maintain this for small scale projects as well)	EB 34	Ann 09	Letter with reference : BEPSB –DNA-CDM 01 dated 24 August 2008 was sent to DNA, Malaysia and BEPSB – UNFCCC-CDM-01 dated 24 August 2008 was sent to UNFCCC informing the intention to implement the project activity as CDM project activity.	OK	OK
w. In CDM-SSC-PDD section C.1.2 is the expected operational lifetime of the project activity in years and months provided?	EB 34	Ann 09	Yes, 25 years – 0 month	OK	OK
x. In CDM-SSC-PDD section C.2 is it stated whether the project activity will use a renewable or a fixed crediting period and completed C.2.1 or C.2.2 accordingly?	EB 34	Ann 09	The project activity would apply fixed crediting period and would commence after the registration of the project activity as CDM project activity.	OK	OK
y. In CDM-SSC-PDD section C.2.1 is it indicated that each crediting period shall be at most 7 years and may be renewed at most two times, provided that, for each renewal, a designated operational entity determines and informs the Executive Board that the original project baseline is still valid or has been updated taking account of new data where applicable?	EB 34	Ann 09	Not applicable. The project would apply fixed crediting period of 10 years.	OK	OK
z. In CDM-SSC-PDD section C.2.1.1 are the dates in the following format: (DD/MM/YYYY) provided?	EB 34	Ann 09	Not applicable	OK	OK
aa. In CDM-SSC-PDD section C.2.1.2 is the length of the first crediting period in years and months?	EB 34	Ann 09	Not applicable	OK	OK
bb. In CDM-SSC-PDD section C.2.2 is it indicated fixed crediting period at most ten (10) years	EB 34	Ann 09	Yes.	OK	OK



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cc.	In CDM-SSC-PDD section C.2.2.1 are the dates in the format (DD/MM/YYYY) provided?	EB 34	Ann 09	Yes.	OK	OK
dd.	In CDM-SSC-PDD section C.2.2.2 is the length of the crediting period in years and months provided?	EB 34	Ann 09	Yes, 10 Years – 0 month.	OK	OK
ee.	In CDM-SSC-PDD section D.1 is the documentation on the analysis of the environmental impacts, if required by Host Party, provided?	EB 34	Ann 09	Not required by host country.	OK	OK
ff.	In CDM-SSC-PDD section E.1 are following provided?	EB 34	Ann 09	-	-	-
i.	The process by which comments by local stakeholders have been invited and compiled. An invitation for comments by local stakeholders shall be made in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders and allows for a reasonable time for comments to be submitted	EB 34	Ann 09	Yes. Local stakeholders and some institution have been invited for attending stakeholders meeting on 28 <sup>th</sup> August 2008.	OK	OK
ii.	The project activity is described in a manner, which allows the local stakeholders to understand the project activity, taking into account confidentiality provisions of the CDM modalities and procedures	EB 34	Ann 09	Yes.	OK	OK
iii.	The local stakeholder process has been completed before submitting the proposed project activity to the DOE for validation	EB 34	Ann 09	Yes The local stakeholder process has been completed on 28 <sup>th</sup> August 2008.	OK	OK



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gg. In CDM-SSC-PDD section E.2 are following provided?	EB 34	Ann 09	-	-	-
i. Local stakeholders that have made comments identified	EB 34	Ann 09	Yes, Local stakeholders have made 4 comments and PP has answered all the questions.	OK	OK
ii. Asummary of these comments	EB 34	Ann 09	Yes Summary comments have been documented See PDD section E.2	OK	OK
hh. In CDM-SSC-PDD section E.3 is the explanation of how due account have been taken of comments received from local stakeholders provided?	EB 34	Ann 09	Yes, based on the interviewees, the stakeholders who attended this consultation meeting expressed their satisfaction towards implementation of the proposed biomass project.	OK	OK
i. In CDM-SSC-PDD Annex 1 are following provided?	EB 34	Ann 09	-	-	-
ii. Contact information of project participants	EB 34	Ann 09	Yes.	OK	OK
iii. For each organisation listed in section A.3 the following mandatory fields: Organization, Name of contact person, Street, City, Postfix/ZIP, Country, Telephone and Fax or e-mail	EB 34	Ann 09	Yes.	OK	OK
ii. In CDM-SSC-PDD Annex 2 is information from Parties included in Annex I on sources of public funding for the project activity which shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties provided?	EB 34	Ann 09	Yes.	OK	OK



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jj. In CDM-SSC-PDD Annex 3 is the background information used in the application of the baseline methodology provided?	EB 34	Ann 09	Yes.	OK	OK
kk. In CDM-SSC-PDD Annex 4 is the background information used in the application of the monitoring methodology provided?	EB 34	Ann 09	Yes.	OK	OK
<b>4. Project description</b>					
a. Does the PDD contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation?	VVM	58	Yes. The project activity involve installation of a new biomass based power plant utilizing the palm oil mill biomass and wood residue to supply 10 MW net electricity to TNB grid.	OK	OK
b. Is the description of the proposed CDM project activity as contained in the PDD:	VVM	59	-	-	-
i. sufficiently covering all relevant elements?	VVM	59	Yes.	OK	OK
ii. accurate?	VVM	59	Yes.	OK	OK
iii. providing the reader with a clear understanding of the nature of the proposed CDM project activity?	VVM	59	Yes.	OK	OK
iv. Are there any changes/modifications compared to the webhosted PDD?	VVM	59	No.	OK	OK
c. Is the proposed CDM project activity in existing facilities or or utilizing existing equipments?	VVM	60	The proposed project is installation of a new biomass power plant.	OK	OK
d. Is the CDM project activity one of the following types:	VVM	60	-	-	-
i. Large scale?	VVM	60	Small scale	OK	OK
ii. Non-bundled small scale projects with emission reductions exceeding 15,000 tonnes per year?	VVM	60	The project activity is not debundled component of larger project activity.	OK	OK



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iii. Bundled small scale projects, each with emission reductions not exceeding 15,000 tonnes?	VVM	60	No.	OK	OK
e. If yes to (c) and (d) above, was a physical site inspection conducted to confirm that the description in the PDD reflects the proposed CDM project activity, unless other means are specified in the methodology?	VVM	60	Yes, physical site inspection has conducted on 05/08/2009 and 01/06/2011.	OK	OK
f. If yes to (d.iii) above, was the number of physical site visits base on samping?	VVM	60	N/A	OK	OK
g. If yes is the sampling size appropriately justified through statistical analysis?	VVM	60	N/A	OK	OK
h. For other individual proposed small scale CDM project activities with emission reductions not exceeding 15,000 tonnes per year, was a physical site inspection conducted?	VVM	61	Yes. Physical site visit was conducted on 05/08/2009 and 01/06/2011.	OK	OK
i. For all other proposed CDM project activities not referred to in paragraphs 59 – 61, was a physical site inspection conducted?	VVM	62	N/A	OK	OK
j. If no, was it appropriately justified?	VVM	62	N/A	OK	OK
k. Does the proposed CDM project activity involve the alteration of an existing installation or process?	VVM	63	No. The proposed project activity involves installation of a new power plant.	OK	OK
l. If yes, does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?	VVM	63	N/A	OK	OK
<b>5. Baseline and monitoring methodology</b>					
<b>a. General requirement</b>					
a. Do the the baseline and monitoring methodologies selected by the project participants comply with the methodologies	VVM	65	Yes.	OK	OK





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previously approved by the CDM Executive Board?					
b. Is the selected methodology applicable to the project activity?	VVM	66	Refer to (5.b.a) below	-	-
c. Had the PP correctly applied the selected methodology?	VVM	66	Refer to (5.b.d) below	-	-
d. Had the selected methodology been correctly applied with respect to project boundary?	VVM	67	Refer to (5.c) below	-	-
e. Had the selected methodology been correctly applied with respect to baseline identification?	VVM	67	Refer to (5.d) below	-	-
f. Had the selected methodology been correctly applied with respect to Algorithms and/or formulae used to determine emission reductions?	VVM	67	Refer to (5.e) below	-	-
g. Had the selected methodology been correctly applied with respect to additionality?	VVM	67	Yes.	OK	OK
i. Has the general guidance to the small scale CDM methodologies, information on additionality (attachment A to appendix B) been applied correctly?	AMS	I.D	Yes.	OK	OK
h. Had the selected methodology been correctly applied with respect to monitoring methodology?	VVM	67	Refer to (7) below	OK	OK
<b><i>b. Applicability of the selected methodology to the project activity</i></b>					
a. Is the selected baseline and monitoring methodology, previously approved by the CDM Executive Board, applicable to the project activity including that the used version is valid?	VVM	68	Yes. AMS I D version 17 still valid.	OK	OK
b. Has the DOE applied specific guidance provided by the CDM Executive Board in respect to the applicable approved methodology?	VVM	69	N/A	OK	OK
c. Is the methodology correctly quoted?	VVM	70	Yes.	OK	OK



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d. Are the applicability conditions of the methodology met?	VVM	71	Yes.	OK	OK
i. Does the project activity comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass that supply electricity to a national or a regional grid? Note: Project activities that displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit shall apply AMS-I.F.	AMS	I.D	The project activity comprises of renewable biomass power plant supplying electricity to the grid of TNB.	OK	OK
ii. Does the project activity (a) install a new power plant at site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition (c) involve a retrofit of (an) existing plant(s) or (d) involve a replacement of (an) existing plant(s)	AMS	I.D	The project activity install a new biomass power plant where there was no renewable energy power plant operating prior to the implementation of the project activity. The project activity is a new Greenfield plant.	OK	OK
iii. For Hydro power plants with reservoirs, does it satisfy at least one of the following conditions (a) the project activity is implemented in an existing reservoir with no change in the volume of reservoir (b) the project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, is greater than 4 W/m <sup>2</sup> (c) the project activity results in new reservoirs and the power density of the power plant is	AMS	I.D	N/A	OK	OK



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greater than 4 W/m <sup>2</sup> .					
iv. For biomass power plants, does the project plant uses any other biomass type other than renewable biomass?  Note: refer Annex 18, EB 23 for the definition of renewable biomass.	AMS	I.D	No, Only renewable biomass such as PKS, EFB, mesocarp fibre and some wood residues would be used in the project activity.	OK	OK
v. Is the following guideline followed: (a) If the new unit has both renewable and non-renewable components (eg., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. (b) If the new unit co-fires fossil fuels, the capacity of the entrie unit shall not exceed the limit of 15 MW.	AMS	I.D	This small scale project activity has only renewable component and no fossil fuel components is added.  The installed capacity of the project activity is only 11 MW and less than 15 MW.	OK	OK
vi. Is the following guideline followed: Combined heat and power (co-generation) systems are not eligible under this category	AMS	I.D	N/A.	OK	OK
vii. Is the following guideline followed: In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct6 from the existing	AMS	I.D	N/A.	OK	OK
viii. Is the following guideline followed: In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	AMS	I.D	N/A.	OK	OK
e. Is the proeject activity expected to result in	VVM	71	No.	OK	OK



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emissions other than those allowed by the methodology?					
f. Is the choice of the methodology justified?	VVM	71	Yes.	OK	OK
g. Have the project participants shown that the project activity meets each of the applicability conditions or the approved methodology?	VVM	71	Refer to (5.b.d) above	-	-
h. Have the project participants shown that the project activity meets each of the applicability conditions of any tool or other methodology component referred to the methodology?	VVM	71	Yes.	OK	OK
i. Is the DOE, based on local and sectoral knowledge, aware that comparable information is available from sources other than that used in the PDD?	VVM	71	N/A.	OK	OK
j. If yes, was the PDD cross checked against the other sources to confirm that the project activity meets the applicability conditions of the methodology? (provide the reference to these choices)	VVM	71	N/A	OK	OK
k. Can a determination regarding the applicability of the selected methodology to the proposed CDM project activity be made?	VVM	72	Yes.	OK	OK
l. If no, clarification of the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	72	N/A.	OK	OK
m. If answer to (5.b.d) above is "no", revision or deviation from the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	73	N/A.	OK	OK
n. If yes to (5.b.l) and (5.b.m) above, a request for registration was submitted before the CDM	VVM	74	N/A.	OK	OK



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Executive Board has approved the proposed deviation or revision?					
<b>c. Project boundary</b>					
a. Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity?	VVM	78	Yes.	OK	OK
i. Does the physical, geographical site of the renewable generation source delineates the project boundary ?	AMS	I.D	Yes, as per paragraph 9 of the methodology.	OK	OK
b. Is the delineation in the PDD of the project boundary correct and include identification of all locations, processes and equipment including secondary equipment and associated processes such as logistics etc.?	VVM	79	Yes. This has been confirmed during site visit done on 01/06/2011.	OK	OK
c. Does the delineation in the PDD of the project boundary meet the requirements of the selected baseline?	VVM	79	Yes.	OK	OK
d. Have changes been made to the project boundary in comparison to the webhosted PDD. If yes please comment on the reason for the changes.	VVM	79	No.	OK	OK
e. Have all sources and GHGs required by the methodology been included within the project boundary?	VVM	79	Not applicable for small scale project.	OK	OK
f. Does the methodology allow project participant to choose whether a source or gas is to be included within the project boundary?	VVM	79	Not applicable for small scale project.	OK	OK
g. If yes, have the project participants justified that	VVM	79	N/A	OK	OK



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choice?					
h. If yes, is the justification provided reasonable? (provide reference to the supporting documented evidence provided by the project participants)	VVM	79	N/A	OK	OK
<b>d. Baseline identification</b>					
a. Does the PDD identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity?	VVM	81	Yes.	OK	OK
b. Has any procedure contained in the methodology to identify the most reasonable baseline scenario, been correctly applied?	VVM	82	Yes.	OK	OK
i. Is the following guideline followed: If the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources.	AMS	I.D	Yes.	OK	OK
ii. Is the baseline emissions calculated as the product of electrical energy baseline $EG_{BL, y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission $BE_y = EG_{BL, y} * EF_{CO2, grid, y}$	AMS	I.D	Yes.	OK	OK
iii. Is the Emission Factor calculated in a transparent and conservative manner as follows:	AMS	I.D	Yes. Grid emission factor has been obtained from the baseline study by PTM (Malaysia Energy Centre), in December 2008 whereby	OK	OK



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<p>(a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the .Tool to calculate the Emission Factor for an electricity system.. OR</p> <p>(b) The weighted average emissions (in t CO<sub>2</sub>/MWh) of the current generation mix. The data of the year in which project generation occurs must be used. Calculations shall be based on data from an official source (where available) and made publicly available.</p>		<p>emission factor has been estimated using 2 approaches as mentioned in methodology AMS I D.</p> <p>As per option (a), emission factor estimated is 0.684 ton CO<sub>2e</sub>/MWh.</p> <p>As per option 9b), emission factor estimated is 0.695 ton CO<sub>2e</sub>/MWh.</p> <p>As conservative approach, value of 0.684 ton CO<sub>2e</sub>/MWh.has been adopted as emission factor of the grid.</p>	
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iv. Is the following guideline followed: - In the case of landfill gas, waste gas, wastewater treatment and agro-industries projects, recovered methane emissions are eligible under a relevant Type III category. - If the recovered methane is used for electricity generation for supply to a grid then the baseline shall be calculated in accordance with paragraphs below else use other applicable type I methodologies such as AMS-IA or AMS-I.F. - If the recovered methane is used for heat generation or cogeneration it is eligible under category I.C.	AMS	I.D	N/A.	OK	OK
v. Is the following guideline followed for project activities that involve retrofits or replacements of an existing facility for renewable energy generation: - The baseline scenario is the continuing operation of the existing plant. - The methodology uses historical electricity generation data to determine the electricity generation of the existing plant in the baseline scenario, assuming that the historical situation observed prior to the implementation of the project activity would continue. In the absence of the CDM project activity, the existing facility would continue to provide electricity to the grid BL retrofit y EG, at historical average levels EGhistorical, y until the time at which the electrical generation facility would be likely to be replaced or retrofitted in the absence of the	AMS	I.D	N/A.	OK	OK



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<p>CDM project activity (BaselineRetrofit DATE). From that point of time onwards, the baseline scenario is assumed to correspond to the project activity, and baseline electricity production is assumed to equal the project.s net electricity production and no emission reductions are assumed to occur.</p>					
<p>vi. Is the following guideline followed for Retrofit/capacity addition of hydro, solar, wind, geothermal, wave and tidal plants:</p> <ul style="list-style-type: none"> <li>- Use of standard deviation for calculating baseline electricity generation.</li> <li>- A minimum of 5 years (60 months) (excluding abnormal years) of historical generation data is required in the case of hydro facilities and for other facilities a minimum of 3 years (36 months) data is required.</li> <li>- In the case that 5 years of historical data are not available - e.g., due to recent retrofits or exceptional circumstances<sup>8</sup> - a new methodology or methodology revision shall be proposed.</li> <li>- In the case of wind, solar, wave or tidal power plants, the electricity produced by the added power plant(s) or unit(s) could be directly metered and used to determine EG BL,y. provided that the electricity produced by the added power plant(s) or unit(s) addition is separately metered.</li> <li>- Project activities for capacity addition in hydro or geothermal shall use equation 3 replacing subscript .retrofit. with .capacity addition.</li> </ul>	AMS	I.D	N/A	OK	OK



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<p>vii. Is the following guideline followed for Retrofit renewable energy units other than hydro, solar, wind, geothermal, wave and tidal plants: Baseline emissions are calculated as: <math>BE_{retrofit,CO2,y} = (EGPJ_{,retrofit,y} - EGBL_{,retrofit,y}) * EFCO2</math> EG historical - A minimum of 3 years of data is required. In the case that 3 years of historical data are not available 9- e.g., due to recent retrofits or exceptional circumstances - a new methodology or methodology revision shall be proposed</p>	AMS	I.D	N/A.	OK	OK
<p>viii. Is the requirements concerning demonstration of the remaining lifetime of the replaced equipment met as described in the general guidelines to SSC methodologies? Note: If the remaining lifetime of the affected systems increases due to the project activity, the crediting period shall be limited to the estimated remaining lifetime, i.e., the time when the affected systems would have been replaced in the absence of the project activity.</p>	AMS	I.D	N/A.	OK	OK



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ix. Is the following guideline followed for Capacity addition with renewable energy units other than hydro, solar, wind, geothermal, wave and tidal plants: - The baseline scenario is the existing facility that would continue to supply electricity to the grid at historical levels, until the time at which the generation facility would likely be replaced or retrofitted (DATEBaselineRetrofit). - If the existing units shut down, are derated, or otherwise become limited in production, the project activity should not get credit for generating electricity from the same renewable resources that would have otherwise been used by the existing units (or their replacements).	AMS	I.D	N/A.	OK	OK
c. Does the selected methodology require use of tools (such as the "Tool for the demonstration and assessment of additionality" and the "Combined tool to identify the baseline scenario and demonstrate additionality") to establish the baseline scenario?	VVM	81	N/A.	OK	OK
d. If yes, was the methodology consulted on the application of these tools? (In such cases, the guidance in the methodology shall supersede the tool.)	VVM	82	N/A.	OK	OK
e. Does the methodology require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario?	VVM	83	No.	OK	OK
f. If yes, are all scenarios that are considered by the project participants and are supplementary to those required by the methodology reasonable in	VVM	83	N/A.	OK	OK



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the context of the proposed CDM project activity?					
g. Has any reasonable alternative scenario been excluded?	VVM	83	N/A.	OK	OK
h. Is the baseline scenario identified reasonably supported by:	VVM	84	-	-	-
i. Assumptions?	VVM	84	Yes.	OK	OK
ii. Calculations?	VVM	84	Yes.	OK	OK
iii. Rationales?	VVM	84	Yes.	OK	OK
i. Are the documents and sources referred to in the PDD correctly quoted and interpreted?	VVM	84	Yes.	OK	OK
j. Was the information provided in the PDD cross checked with other verifiable and credible sources, such as local expert opinion, if available? (identify the sources)	VVM	84	N/A.	OK	OK
k. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity?	VVM	85	AMS I D has prescribed the baseline scenario as the MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.	OK	OK
l. Have all relevant policies and circumstances been identified and correctly considered in the PDD, in accordance with the guidance by the CDM Executive Board?	VVM	85	Yes.	OK	OK
m. Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	VVM	86	N/A.	OK	OK
<b>e. Algorithms and/or formulae used to determine emission reductions</b>					
a. Do the steps taken and equations applied to	VVM	89	Yes.	OK	OK



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calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring?					
b. Have the equations and parameters in the PDD been correctly applied with respect those in the select approved methodology?	VVM	90	Yes.	OK	OK
i. Have project emissions considered as described in recent version of ACM0002 followed for: - Emissions related to the operation of geothermal power plants; - Emissions from water reservoirs of hydro power plants.	AMS	I.D	N/A	OK	OK
ii. Is leakage considered, if the energy generating equipment is transfereed from another activity	AMS	I.D	No leakage emission as the project activity is installation of new biomass power plant.	OK	OK
iii. Is emission reduction calculated as per equation $ER_y = BE_y - PE_y - LE_y$	AMS	I.D	Yes. $LE_y = 0$ .	OK	OK
c. Does the methodology provide for selection between different options for equations or parameters?	VVM	90	Yes.	OK	OK
d. If yes, has adequate justification been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided)?	VVM	90	Yes.	OK	OK
e. If yes, have correct equations and parameters been used, in accordance with the methodology selected?	VVM	90	Refer to (5.e.b) above	-	-



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f. Will data and parameters be monitored throughout the crediting period of the proposed CDM project activity?	VVM	91	<p>No. The emission factor is determined ex-ante for the project activity. Grid emission factor has been obtained from the baseline study by PTM (Malaysia Energy Centre), in December 2008 whereby emission factor has been estimated using 2 approaches as mentioned in methodology AMS I D.</p> <p>As per option (a), emission factor estimated is 0.684 ton CO<sub>2e</sub>/MWh. As per option 9b), emission factor estimated is 0.695 ton CO<sub>2e</sub>/MWh.</p> <p>As conservative approach, value of 0.684 ton CO<sub>2e</sub>/MWh. has been adopted as emission factor of the grid.</p>	OK	OK
g. If no, and these data and parameters will remain fixed throughout the crediting period, are all data sources and assumptions:	VVM	91			
i. Appropriate and correct?	VVM	91	Yes.	OK	OK
ii. Applicable to the proposed CDM project activity?	VVM	91	Yes.	OK	OK
iii. Resulting in a conservative estimate of the emission reductions?	VVM	91	Yes.	OK	OK
h. Will data and parameters be monitored on implementation and hence become available only after validation of the project activity?	VVM	91	N/A	OK	OK
i. If yes, are the estimates provided in the PDD for these data and parameters reasonable?	VVM	91	N/A	OK	OK
<b>6. Additionality of a project activity</b>					
(a) Does the PDD describe how a proposed CDM project activity is additional?	VVM	94	Yes.	OK	OK



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(b) Has the project participant used the "Tool for the demonstration and assessment of additionality"? (if yes go to item "d")	VVM	94	No. Simplified modalities and procedures for small scale CDM project activities guides to establish additionality of the project activity as per attachment A to appendix B.	OK	OK
(c) Has the project participant provided an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers	VVM	94	-	-	-
i. Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions?	VVM	94	Yes	OK	OK
ii. Technological barrier: a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions?	VVM	94	N/A	OK	OK
iii. Barrier due to prevailing practice: prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions?	VVM	94	N/A	OK	OK
iv. Other barriers: without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher?	VVM	94	N/A	OK	OK
(d) Were the following steps of the tool to assess	EB	Ann	-	-	-





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additionality used:	39	10			
i. Identification of alternatives to the project activity?	EB 39	Ann 10	N/A.	OK	OK
ii. Investment analysis to determine that the proposed project activity is either: 1) not the most economically or financially attractive, or 2) not economically or financially feasible?	EB 39	Ann 10	Yes. Investment analysis is used to determine that the proposed project activity is not financially feasible without revenue from the sale of certified emission reductions.	OK	OK
iii. Barriers analysis?	EB 39	Ann 10	NA.	OK	OK
iv. Common practice analysis?	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK
(e) In step 1 (i) have all the sub-steps as below been followed?	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK
i. Sub-step 1a: Define alternatives to the project activity	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK
ii. Sub-step 1b: Consistency with mandatory laws and regulations	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK
(f) Have the following alternatives been included while defining alternatives as per sub-step 1a?	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK
i. (a) The proposed project activity undertaken without being registered as a CDM project activity;	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK
ii. (b) Other realistic and credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs services or services with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology;	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK
iii. (c) If applicable, continuation of the current situation (no project activity or other alternatives	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK



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undertaken).					
(g) Has the project participant included the technologies or practices that provide outputs or services with comparable quality, properties and application areas as the proposed CDM project activity and that have been implemented previously or are currently being introduced in the relevant country/region?	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK
(h) Has the outcome of Step 1a: Identified realistic and credible alternative scenario(s) to the project activity done correctly? Please briefly mention the outcome.	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK
(i) Is the alternative(s) in compliance with all mandatory applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution.?	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK
(j) If an alternative does not comply with all mandatory applicable legislation and regulations, has it been shown that, based on an examination of current practice in the country or region in which the law or regulation applies, those applicable legal or regulatory requirements are systematically not enforced and that noncompliance with those requirements is widespread in the country?	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK
(k) Has the outcome of Step 1b: Identified realistic and credible alternative scenario(s) to the project activity that are in compliance with mandatory legislation and regulations taking into account the enforcement in the region or country and EB	EB 39	Ann 10	Not mandatory for small scale project.	OK	OK



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decisions on national and/or sectoral policies and regulations done correctly? Please state the outcome.					
(l) Has PP selected Step 2 (Investment analysis) or Step 3 (Barrier analysis) or both Steps 2 and 3?	EB 39	Ann 10	PP selected investment analysis.	OK	OK
(m) In step 2, have all the sub-steps as below been followed?	EB 39	Ann 10	-	-	-
i. Sub-step 2a: Determine appropriate analysis method;	EB 39	Ann 10	Yes.	OK	OK
ii. Sub-step 2b: Option I. Apply simple cost analysis;	EB 39	Ann 10	Not applicable	OK	OK
iii. Sub-step 2b: Option II. Apply investment comparison analysis;	EB 39	Ann 10	Not applicable	OK	OK
iv. Sub-step 2b: Option III. Apply benchmark analysis;	EB 39	Ann 10	Benchmark analysis is applied for this project activity <b>CAR 2</b>  The benchmark stated in the PDD upload for GSP is 8.25% but had been changed to 8.98% in the latest version of PDD, Please explain.	<b>CAR-2</b>	OK



**BUREAU  
VERITAS**

## VALIDATION REPORT

v. Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III);	EB 39	Ann 10	Not applicable	OK	OK
vi. Sub-step 2d: Sensitivity analysis (only applicable to Options II and III).	EB 39	Ann 10	<b>CAR 3</b> <b>For the sensitivity analysis:</b> <b>(1) Please assess the main parameters in the sensitivity analysis as per guidelines on the assessment of investment analysis, version 5.</b> <b>(2) Please further assess the sensitivity analysis for all indicators on under which conditions the IRR will cross the benchmark and the possibility</b>	<del>CAR 3</del>	OK
(n) In sub-step 2a has the determination of appropriate method of analysis done as per the guidance as below?	EB 39	Ann 10			
i. Simple cost analysis if the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income (Option I).	EB 39	Ann 10	Not applicable as benchmark analysis is used in this project.	OK	OK
ii. Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III). Specify option used with justification.	EB 39	Ann 10	The benchmark analysis (Option III) is used for the Batu Pahat Biomass project as the project activity generates other financial and economic benefits other than CDM revenue.	OK	OK
(o) Has the below guideline followed for sub-step 2b Option I. Apply simple cost analysis? Document the costs associated with the CDM project activity and the alternatives identified in Step1 and demonstrate that there is at least one alternative which is less costly than the project activity.	EB 39	Ann 10	Not applicable	OK	OK



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(p) Has the below guideline followed for sub-step 2b Option II. Apply investment comparison analysis? Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service most suitable for the project type and decision-making context. Please specify	EB 39	Ann 10	Not applicable	OK	OK
(q) Has the below guideline followed for Sub-step 2b: Option III. Apply benchmark analysis?	EB 39	Ann 10	Yes. Benchmark analysis is applied throughout the project activity.	OK	OK
i. Identify the financial/economic indicator, such as IRR, most suitable for the project type and decision context.	EB 39	Ann 10	Yes. IRR was used in determining the feasibility of the project.	OK	OK
ii. When applying Option II or Option III, the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer. Only in the particular case where the project activity can be implemented by the project participant, the specific financial/economic situation of the company undertaking the project activity can be considered.	EB 39	Ann 10	Benchmark analysis (Option III) was used and the parameters used are standard in the market which is not linked to the subjective profitability expectation or risk profile of the project.	OK	OK
iii. Discount rates and benchmarks shall be derived from: (a) Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data; (b) Estimates of the cost of financing and required return on capital	EB 39	Ann 10	The benchmark of 8.98% was used in the investment analysis and is supported by relevant national authorities which are an applicable benchmark in Malaysia for CDM projects. No discount rates and other benchmarks were set against the project activity.	OK	OK



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(e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on bankers views and private equity investors/funds' required return on comparable projects; (c) A company internal benchmark (weighted average capital cost of the company), only in the particular case referred to above in 2. The project developers shall demonstrate that this benchmark has been consistently used in the past, i.e. that project activities under similar conditions developed by the same company used the same benchmark; (d) Government/official approved benchmark where such benchmarks are used for investment decisions; (e) Any other indicators, if the project participants can demonstrate that the above Options are not applicable and their indicator is appropriately justified. Please specify benchmark and justify.					
(r) Has the below guideline followed for Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III)?	EB 39	Ann 10	Yes	OK	OK
i. Calculate the suitable financial indicator for the proposed CDM project activity and, in the case of Option II above, for the other alternatives. Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but possibly including inter alia subsidies/fiscal incentives, ODA, etc, where applicable), and, as	EB 39	Ann 10	All financial indicators have been taken into account in the proposed CDM project activity. All relevant costs and revenues were also taken into consideration in the investment analysis. I	OK	OK



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appropriate, non-market cost and benefits in the case of public investors if this is standard practice for the selection of public investments in the host country.					
ii. Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD.	EB 39	Ann 10	Yes. The investment analysis was presented in a transparent manner with all assumptions provided.	OK	OK
iii. Justify and/or cite assumptions.	EB 39	Ann 10	All assumptions has been justified.	OK	OK
iv. In calculating the financial/economic indicator, the project's risks can be included through the cash flow pattern, subject to project-specific expectations and assumptions.	EB 39	Ann 10	Yes. The sensitivity analysis was presented.	OK	OK
v. Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.	EB 39	Ann 10	No assumptions or input data for the investment analysis were differed across the project activity.	OK	OK
vi. Present in the CDM-PDD a clear comparison of the financial indicator for the proposed CDM activity. Please specify details for above.	EB 39	Ann 10	Yes	OK	OK
(s) Has the below guideline followed for Sub-step 2d: Sensitivity analysis (only applicable to Options II and III)? Include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions.	EB 39	Ann 10	Yes.	OK	OK
(t) Has the outcome of Step 2 clearly mentioned with justification?	EB 39	Ann 10	-	-	-
(u) In step 3: Barrier analysis have all the sub-steps as below been followed?	EB 39	Ann 10	N/A.	OK	OK



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i. Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project activity;	EB 39	Ann 10	N/A	OK	OK
ii. Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity).	EB 39	Ann 10	N/A	OK	OK
(v) Has the below guideline followed for Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project?	EB 39	Ann 10	Yes.	OK	OK
i. (a) Investment barriers: For alternatives undertaken and operated by private entities: Similar activities have only been implemented with grants or other non-commercial finance terms. No private capital is available from domestic or international capital markets due to real or perceived risks associated with investment in the country where the proposed CDM project activity is to be implemented, as demonstrated by the credit rating of the country or other country investments reports of reputed origin.	EB 39	Ann 10	Yes. Based on the benchmark analysis, without CDM revenue, the project activity is not feasible as the IRR lower than the borrowing rate.	OK	OK
ii. (b) Technological barriers: Skilled and/or properly trained labour to operate and maintain the technology is not available in the relevant country/region, which leads to an unacceptably high risk of equipment disrepair and malfunctioning or other underperformance; Lack of infrastructure for implementation and logistics for maintenance of the technology, Risk of technological failure: the	EB 39	Ann 10	Not applicable.	OK	OK





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process/technology failure risk in the local circumstances is significantly greater than for other technologies that provide services or outputs comparable to those of the proposed CDM project activity, as demonstrated by relevant scientific literature or technology manufacturer information, The particular technology used in the proposed project activity is not available in the relevant region.					
iii. (c) Barriers due to prevailing practice: The project activity is the “first of its kind”.	EB 39	Ann 10	Not applicable.	OK	OK



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iv. (d) Other barriers, preferably specified in the underlying methodology as examples.	EB 39	Ann 10	N/A	OK	OK
(w) Has the outcome from Step 3a clearly mentioned in PDD?	EB 39	Ann 10	N/A.	OK	OK
(x) Has the below guideline followed for Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity)?	EB 39	Ann 10	N/A.	OK	OK
i. If the identified barriers also affect other alternatives, explain how they are affected less strongly than they affect the proposed CDM project activity. In other words, demonstrate that the identified barriers do not prevent the implementation of at least one of the alternatives. Any alternative that would be prevented by the barriers identified in Sub-step 3a is not a viable alternative, and shall be eliminated from consideration.	EB 39	Ann 10	N/A.	OK	OK
ii. Provide transparent and documented evidence, and offer conservative interpretations of this documented evidence, as to how it demonstrates the existence and significance of the identified barriers and whether alternatives are prevented by these barriers.	EB 39	Ann 10	N/A.	OK	OK
iii. The type of evidence to be provided should include at least one of the following: (a) Relevant legislation, regulatory information or industry norms; (b) Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc) undertaken by universities,	EB 39	Ann 10	N/A.	OK	OK



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research institutions, industry associations, companies, bilateral/multilateral institutions, etc; (c) Relevant statistical data from national or international statistics; (d) Documentation of relevant market data (e.g. market prices, tariffs, rules); (e) Written documentation of independent expert judgments from industry, educational institutions (e.g. universities, technical schools, training centres), industry associations and others. Please specify.					
(y) Has the outcome from Step 3 clearly mentioned in PDD?	EB 39	Ann 10	N/A.	OK	OK
(z) In step 4: Common practise analysis have all the sub-steps as below followed?	EB 39	Ann 10	N/A.	OK	OK
i. Sub-step 4a: Analyze other activities similar to the proposed project activity;	EB 39	Ann 10	N/A.	OK	OK
ii. Sub-step 4b: Discuss any similar Options that are occurring.	EB 39	Ann 10	N/A.	OK	OK
(aa) Has the below guideline followed for Sub-step 4a: Analyze other activities similar to the proposed project activity? Provide an analysis of any other activities that are operational and that are similar to the proposed project activity. Other CDM project activities are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.	EB 39	Ann 10	N/A.	OK	OK
(bb) Has the below guideline followed for Sub-step 4b: Discuss any similar Options that are occurring? If	EB 39	Ann 10	N/A.	OK	OK



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similar activities are identified, then it is necessary to demonstrate why the existence of these activities does not contradict the claim that the proposed project activity is financially/economically unattractive or subject to barriers. This can be done by comparing the proposed project activity to the other similar activities, and pointing out and explaining essential distinctions between them that explain why the similar activities enjoyed certain benefits that rendered it financially/economically attractive (e.g., subsidies or other financial flows) and which the proposed project activity cannot use or did not face the barriers to which the proposed project activity is subject. In case similar projects are not accessible, the PDD should include justification about non-accessibility of data/information.					
(cc) Has the outcome from Step 4 clearly mentioned in PDD?	EB 39	Ann 10	N/A.	OK	OK
(dd) Has it been proved that the project is additional?	EB 39	Ann 10	N/A.	OK	OK
(ee) Has the PP demonstrated additionality by explaining Investment barrier, Access-to-finance barrier, Technological barrier, Barrier due to prevailing practice or other barriers?	EB 35	Ann 34	PP demonstrated additionality by explaining investment barrier.	OK	OK
(ff) If Investment barrier has been explained, is it demonstrated that financially more viable alternative to the project activity would have led to higher emissions? Please explain.	EB 35	Ann 34	N/A.	OK	OK
(gg) If Access-to-finance has been explained, is it	EB	Ann	N/A	OK	OK



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demonstrated that the project activity could not access appropriate capital without consideration of the CDM revenues? Please explain.	35	34			
(hh) If Technological barrier has been explained, is it demonstrated that a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions? Please explain.	EB 35	Ann 34	In the absence of the project activity, the most likely scenario would be that TNB would continue to operate fossil fuel type power plant which would generated more CO <sub>2</sub> emission.	OK	OK
(ii) If prevailing practise barrier has been explained, is it demonstrated that the prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions? Please explain.	EB 35	Ann 34	The operation of fossil fuel type power plant is in compliance with all applicable legal and regulatory requirements in Malaysia as long as all the local safety and pollution standards are met.	OK	OK



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(jj) If other barrier has been explained, is it demonstrated that Other barriers such as institutional barriers or limited information, managerial resources, organizational capacity, or capacity to absorb new technologies would prevent the project activity any way?	EB 35	Ann 34	N/A.	OK	OK
(kk) Have the project participants identified the most relevant barrier?	EB 35	Ann 34	Yes.	OK	OK
(ll) Have the project participants provided transparent and documented third party evidence such as national/international statistics, national/provincial policy and legislation, studies/surveys by independent agencies etc. to demonstrate the most relevant barrier? Please explain.	EB 35	Ann 34	Yes.	OK	OK



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<b><i>b. Prior consideration of the clean development mechanism</i></b>					
a. Is the project activity start date prior to the date of publication of the PDD for stakeholder comments?	VVM	98	<p>Yes. The project activity start date is prior to the date of publication of the PDD for stakeholder comments. The project activity start date is 24/11/2008 whereby the date of publication of the PDD for stakeholder comments is from 17 June 2009 – 16 July 2009.</p> <p><b>CL6</b> Please explain the chronology of events including timelines in detail the PDD</p> <p>Please provide contract between consultant and the PP.</p> <p>Please provide Emission Reduction Purchase agreement</p>	CL-6	OK
b. If yes, were the CDM benefits considered necessary in the decision to undertake the project as a proposed CDM project activity?	VVM	98	Yes, CDM benefits have been considered in the decision to undertake the project as a proposed CDM project activity.	OK	OK
c. Is the start date of the project activity, reported in the PDD, in accordance with the "Glossary of CDM terms", which states that "The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins."?	VVM	99	Yes. The start date of project is 24/11/2008 which is based on the PO of biomass boiler.	OK	OK
d. Does the project activity require construction, retrofit or other modifications?	VVM	99	Yes. The project activity is new installation of biomass power plant.	OK	OK
e. If yes, is it ensured that the date of commissioning cannot be considered as the	VVM	99	Project activity start date is based on the PO of biomass boiler date i.e on 24/11/2008.	OK	OK



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project activity start date?					
f. Is it a new project activity (a project activity with a start date on or after 02 August 2008) or an existing project activity (a project activity with a start date before 02 August 2008)?	VVM	100	Yes, It is a new project with starting date after 02 August 2008.	OK	OK
g. For a new project, for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the CDM Executive Board before the project activity start date, had the PP informed the Host Party DNA and/or the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status? (Provide reference to such confirmation from host Party DNA and/or UNFCCC secretariat).	VVM	101	PP had informed to DNA Malaysia and UNFCCC secretary-CDM in writing of the commencement of the project activity and of their intention to seek CDM status on 24 August 2008.	OK	OK
h. For an existing project activity, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are the following evidences provided:	VVM	102	N/A.	OK	OK
i. Evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project, including, inter alia:	VVM	102	N/A	OK	OK
a. minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a proposed CDM project activity?	VVM	102	N/A	OK	OK
ii. reliable evidence from project participants that must indicate that continuing and real actions	VVM	102	-	-	-





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were taken to secure CDM status for the project in parallel with its implementation, including, inter alia:						
a. contract with consultants for CDM/PDD/methodology services?	VVM	102	N/A		OK	OK
b. Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds)?	VVM	102	N/A		OK	OK
c. evidence of agreements or negotiations with a DOE for validation services?	VVM	102	N/A		OK	OK
c. submission of a new methodology to the CDM Executive Board?	VVM	102	N/A		OK	OK
d. publication in newspaper?	VVM	102	N/A		OK	OK
e. interviews with DNA?	VVM	102	N/A		OK	OK
f. earlier correspondence on the project with the DNA or the UNFCCC secretariat?	VVM	102	N/A		OK	OK
d. Has the chronology of events including time lines been appropriately captured and explained/detailed in the PDD?	VVM	102	N/A		OK	OK
<b>c. Identification of alternatives</b>						
a. Does the approved methodology that is selected by the proposed CDM project activity prescribe the baseline scenario and hence no further analysis is required?	VVM	105	Yes		OK	OK
b. If no, does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario?	VVM	105	N/A		OK	OK
c. Does the list of alternatives given in the PDD	VVM	106	-		-	-



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ensure that:					
i. the list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity?	VVM	106	N/A	OK	OK
ii. the list contains all plausible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?	VVM	106	N/A	OK	OK
iii. the alternatives comply with all applicable and enforced legislation?	VVM	106	N/A	OK	OK
<b>d. Investment analysis</b>					
a. Has investment analysis been used to demonstrate the additionality of the proposed CDM project activity?	VVM	108	Yes. Investment analysis been used to demonstrate the additionality of the proposed CDM project activity.	OK	OK
b. If yes, does the PDD provide evidence that the proposed CDM project activity would not be:	VVM	108	-	-	-
i. the most economically or financially attractive alternative?	VVM	108	N/A	OK	OK
ii. economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs)?	VVM	108	Yes.	OK	OK
c. Was this shown by one of the following approaches?	VVM	109	-	-	-
i. The proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives	VVM	109	Not applicable.	OK	OK



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identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity.					
ii. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative.	VVM	109	Not applicable.	OK	OK
iii. The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	VVM	109	The financial returns presented in the investment analysis spreadsheet shows that it is sufficient to justify the required investment as the IRR of the CDM project proves favourable given the CER and electricity revenue in place.	OK	OK
d. Is the period of assessment limited to the proposed crediting period of the CDM project activity?	EB 51	Ann 58	The period of assessment is not limited to the proposed crediting period of the CDM project activity. 20 years chosen as the period of assessment and in line with the guidelines on the assessment of investment analysis.	OK	OK
e. Does the project IRR and equity IRR calculations reflect the period of expected operation of the underlying project activity (technical lifetime), or - if a shorter period is chosen - include the fair value of the project activity assets at the end of the assessment period?	EB 51	Ann 58	Yes. The project IRR calculations reflected the period of expected operation of the underlying project activity. Technical lifetime of the project is 25 years – as per default value in tool to determine the remaining lifetime of equipment	OK	OK
f. Does the IRR calculation include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment?	EB 51	Ann 58	Yes. The IRR calculation includes the cost of major maintenance that are expected to be incurred during the period of assessment.	OK	OK
g. Do the project participants justify the appropriateness of the period of assessment in	EB 51	Ann 58	Yes. The project participant justified its appropriateness of the period of assessment	OK	OK



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the context of the underlying project activity, without reference to the proposed CDM crediting period?			through the financial analysis. Paragraph 3 of the guidelines on the assessment of investment analysis stated in general a minimum period of 10 years and a maximum of 20 years will be appropriate in term of the period of assessment of IRR. 20 years chosen as the period of assessment and in line with the guidelines on the assessment of investment analysis.		
h. Does the cash flow in the final year include a fair value of the project activity assets at the end of the assessment period?	EB 51	Ann 58	No. The cash flow in the final year does not include a fair value of the project.	OK	OK
i. Has the fair value been calculated in accordance with local accounting regulations where available, or international best practice?	EB 51	Ann 58	Not applicable as there is no fair value calculated for the project activity assets.	OK	OK
j. Does the fair value calculations include both the book value of the asset and the reasonable expectation of the potential profit or loss on the realization of the assets?	EB 51	Ann 58	Not applicable.	OK	OK
k. Was depreciation, and other non-cash items related to the project activity, which have been deducted in estimating gross profits on which tax is calculated, added back to net profits for the purpose of calculating the financial indicator (e.g. IRR, NPV)?	EB 51	Ann 58	Yes. The rationale is because depreciation is not an actual expense incurred by the company and as such does not directly affect the financial viability of the project. To treat both the capital cost of the assets and their depreciation as an expense to the project would be double counting of this cost.	OK	OK
l. Has taxation been included as an expense in the IRR/NPV calculation in cases where the benchmark or other comparator is intended for post-tax comparisons?	EB 51	Ann 58	Yes. Taxation has been included as an expense in the calculation as the benchmark or other comparator is intended for post-tax comparisons,	OK	OK



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m. Are the input values used in all investment analysis valid and applicable at the time of the investment decision taken by the project participant?	EB 51	Ann 58	Yes. All the input values used in all investment analysis valid and applicable at the time of the investment decision taken by the project participant based on the key assumptions on the current market values worked out by the project participant.	OK	OK
n. Is the timing of the investment decision consistent and appropriate with the input values?	EB 51	Ann 58	The investment decision made on 23/07/2008 is consistent and appropriate with the input values. The investment decision was made during the month of July. The exact date was on 23 July 2008. A copy of minutes of meeting of investment decision is submitted for validation.	OK	OK
o. Are all the listed input values been consistently applied in all calculations?	EB 51	Ann 58	Yes. All the input values are consistently applied throughout the IRR calculations.	OK	OK
p. Does the investment analysis reflect the economic decision making context at point of the decision to recommence the project in the case of project activities for which implementation ceases after the commencement and where implementation is recommenced due to consideration of the CDM?	EB 51	Ann 58	Not applicable.	OK	OK
q. Have project participants supplied the spreadsheet versions of all investment analysis?	EB 51	Ann 58	Yes. The project participants supplied the spreadsheet versions of all investment analysis.	OK	OK
r. Are all formulas used in this analysis readable and all relevant cells be viewable and unprotected?	EB 51	Ann 58	Yes. All the formulas used in the analysis is readable and all relevant cells be viewable and unprotected.	OK	OK
s. In cases where the project participant does not wish to make such a spreadsheet available to the	EB 51	Ann 58	Spreadsheet provided.	OK	OK



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public has the PP provided an exact read-only or PDF copy for general publication?					
t. In case the PP wishes to black-out certain elements of the publicly available version, is it justifiable?	EB 51	Ann 58	Not applicable.	OK	OK
u. Was the cost of financing expenditures (i.e. loan repayments and interest) included in the calculation of project IRR?	EB 51	Ann 58	Yes.	OK	OK
v. In the calculation of equity IRR, has only the portion of investment costs which is financed by equity been considered as the net cash outflow?	EB 51	Ann 58	Not applicable.	OK	OK
w. Has the portion of the investment costs which is financed by debt been considered a cash outflow in the calculation of equity IRR? (this is not allowed)	EB 51	Ann 58	No. The portion of the investment costs which is financed by debt is not considered as cash outflow in the IRR calculation.	OK	OK
x. Was a pre-tax benchmark be applied?	EB 51	Ann 58	No pre-tax benchmark was applied.	OK	OK
y. In cases where a post-tax benchmark is applied, is actual interest payable taken into account in the calculation of income tax?	EB 51	Ann 58	No. Actual interest is not taken into account in the calculation of income tax.	OK	OK
z. In such situations, was interest calculated according to the prevailing commercial interest rates in the region, preferably by assessing the cost of other debt recently acquired by the project developer and by applying a debt-equity ratio used by the project developer for investments taken in the previous three years?	EB 51	Ann 58	Not applicable as interest is not taken into account in the income tax calculation.	OK	OK



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aa. In cases where a benchmark approach is used is the applied benchmark appropriate to the type of IRR calculated?	EB 51	Ann 58	Based on Bank Pembangunan's commercial lending rate for the year 2008, the rate was set at 8.98% (6.48% + 2.5%), which became the benchmark for the project activity.	OK	OK
bb. Has local commercial lending rates or weighted average costs of capital (WACC) selected as appropriate benchmarks for a project IRR?	EB 51	Ann 58	Yes. The local commercial lending rates is selected as the appropriate benchmark for the project IRR.	OK	OK
cc. Has required/expected returns on equity selected as appropriate benchmark for an equity IRR?	EB 51	Ann 58	Not applicable.	OK	OK
dd. In case benchmarks supplied by relevant national authorities selected is it applicable to the project activity and the type of IRR calculation presented?	EB 51	Ann 58	Yes. The benchmarks supplied by the relevant national authorities, Bank Pembangunan, is applicable to the project activity and type of IRR calculation presented in the investment analysis.	OK	OK
ee. In the cases of projects which could be developed by an entity other than the project participant is the benchmark applied based on publicly available data sources which can be clearly validated?	EB 51	Ann 58	Yes. All benchmark applied are based on publicly available data sources which can be clearly verified without any exceptions.	OK	OK
ff. Have internal company benchmarks/expected returns (including those used as the expected return on equity in the calculation of a weighted average cost of capital - WACC) been applied in cases where there is only one possible project developer?	EB 51	Ann 58	Not applicable	OK	OK
gg. In such cases, have these values been used for similar projects with similar risks, developed by the same company or, if the company is brand new, would have been used for similar projects in the same sector in the country/region?	EB 51	Ann 58	Not applicable	OK	OK
hh. Has a minimum clear evidence of the resolution	EB	Ann	Not applicable	OK	OK



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by the company's Board and/or shareholders been provided to the effect as above?	51	58			
ii. Has a thorough assessment of the financial statements of the project developer - including the proposed WACC - to assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects been conducted?	EB 51	Ann 58	Not applicable	OK	OK
jj. Does the risk premiums applied in the determination of required returns on equity reflect the risk profile of the project activity being assessed, established according to national/international accounting principles? (It is not considered reasonable to apply the rate general stock market returns as a risk premium for project activities that face a different risk profile than an investment in such indices.)	EB 51	Ann 58	Not applicable	OK	OK
kk. Has an investment comparison analysis and not a benchmark analysis used when the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services?	EB 51	Ann 58	Not applicable.	OK	OK
ll. Have variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues been subjected to reasonable variation (positive and negative) and the results of this variation been presented in the PDD and be reproducible in the associated spreadsheets?	EB 51	Ann 58	Yes.	OK	OK
mm. Have a corrective action been raised for a	EB	Ann	Not applicable.	OK	OK





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variable to be included in the sensitivity analysis which constitute less than 20% and have a material impact on the analysis ?	51	58			
nn. Is the range of variations selected is reasonable in the project context?	EB 51	Ann 58	Yes. The range of variations selected is reasonable in the project context as these variations are the most prudent calculations.	OK	OK
oo. Dos the variations in the sensitivity analysis at least cover a range of +10% and -10%, unless this is not deemed appropriate in the context of the specific project circumstances?	EB 51	Ann 58	Yes. Based on the sensitivity analysis, it covers a range of +10% and -10% and it is deemed appropriate as an average plausible range for the project activity.	OK	OK
pp. In cases where a scenario will result in the project activity passing the benchmark or becoming the most financially attractive alternative, is an assessment done of the probability of the occurrence of this scenario in comparison to the likelihood of the assumptions in the presented investment analysis, taking into consideration correlations between the variables as well as the specific socio-economic and policy context of the project activity?	EB 51	Ann 58	Not applicable.	OK	OK
qq. Was the plant load factor defined ex-ante in the CDM-PDD according to one of the following options:	EB 51	Ann 58	Not applicable.	OK	OK
i. The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval?	EB 51	Ann 58	Not applicable.	OK	OK
ii. The plant load factor determined by a third	EB	Ann	Not applicable.	OK	OK



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party contracted by the project participants (e.g. an engineering company)?	51	58			
rr. Was a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices conducted?	VVM	111	Yes. There was a thorough assessment of all parameters and assumptions used in the project analysis.	OK	OK
ss. Were the parameters cross-checked against third-party or publicly available sources, such as invoices or price indices?	VVM	111	Yes. The parameters were cross-checked against publicly available sources.	OK	OK
tt. Were feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants reviewed?	VVM	111	Not applicable	OK	OK
uu. Was the correctness of computations carried out and documented by the project participants assessed?	VVM	111	Yes. All computations documented by the PP was assessed.	OK	OK
vv. Was the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur, and the likelihood of these conditions assessed?	VVM	111	Yes. The sensitivity analysis does demonstrate the assessment on the conditions variations for the project.	OK	OK
ww. Is the type of benchmark applied is suitable for the type of financial indicator presented?	VVM	112	Project IRR has been selected as the financial indicator for the project activity. The 'local commercial lending rates', 8.98%, is the benchmark for the Project IRR. The same benchmark has been used for sensitivity analysis.	OK	OK
xx. Do any risk premiums applied determining the benchmark reflect the risks associated with the project type or activity?	VVM	112	Not applicable as there is no assessment associated with risk premium in the investment analysis.	OK	OK



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yy. To determine this, was it assessed whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by:	VVM	112		OK	OK
1. assessing previous investment decisions by the project participants involved?	VVM	112	Not applicable		
2. determining whether the same benchmark has been applied?	VVM	112	Not applicable	OK	OK
3. determining if there are verifiable circumstances that have led to a change in the benchmark?	VVM	112	Not applicable	OK	OK
zz. Did the project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed CDM project activities?	VVM	113	Not applicable	OK	OK
xx. If yes:	VVM	113	-	-	-
i. has the FSR been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed?	VVM	113	Yes.	OK	OK
ii. Are the values used in the PDD and associated annexes fully consistent with the FSR?	VVM	113	Yes.	OK	OK
iii. If not, was the appropriateness of the values validated?	VVM	113	Not applicable.	OK	OK
iv. On the basis of its specific local and	VVM	113	Yes.	OK	OK



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sectoral expertise, is confirmation provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision?					
<b>e. Barrier analysis</b>					
a. Has barrier analysis been used to demonstrated the additionality of the proposed CDM project activity?	VVM	115	N/A	OK	OK
b. If yes, does the PDD demonstrate that the proposed CDM project activity faces barriers that:	VVM	115	-	-	-
i. prevent the implementation of this type of proposed CMD project activity?	VVM	115	N/A	OK	OK
ii. do not prevent the implementation of at least one of the alternatives?	VVM	115	N/A,	OK	OK
c. Are there any issues that have a clear direct impact on the financial returns of the project activity, other than: risk related barriers, for example risk of technical failure, that could have negative effects on the financial performance; or barriers related to the unavailability of sources of finance for the project activity? {If yes, these issues cannot be considered barriers and shall be assessed by investment analysis. [Refer to (6.c) above]}	VVM	116	Not applicable.	OK	OK
d. Were the barriers determined as real by:	VVM	1167	-	-	-
i. assssing the available evidence and/or undertaking interviews with relevant individuals (including members of industry associations, government officials or local experts if necessary) to determine whether	VVM	117	N/A	OK	OK



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the barriers listed in the PDD exist?					
ii. ensuring that existence of barriers is substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics?	VVM	117	N/A.	OK	OK
iii. Is existence of a barrier substantiated only by the opinions of the project participants? (If yes, this barrier cannot be considered as adequately substantiated)	VVM	117	N/A.	OK	OK
e. Were the barriers determined as preventing the implementation of the project activity but not the implementation of at least one of the possible alternatives by applying local and sectoral expertise to judge whether a barrier or set of barriers would prevent the implementation of the proposed CDM project activity and would not equally prevent implementation of <i>at least one of</i> the possible alternatives, in particular the identified baseline scenario?	VVM	117	N/A.	OK	OK
<b>f. Common practice analysis</b>					
a. Is this a proposed large-scale, or first-of-its kind small-scale project activity?	VVM	118	Not mandatory for small scale project.	OK	OK
b. If yes, was common practice analysis carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality?	VVM	118	Not mandatory for small scale project.	OK	OK
c. Was it assessed whether the geographical scope (e.g. defined region) of the common practice analysis is appropriate for the assessment of common practice related to the	VVM	120	Not mandatory for small scale project.	OK	OK



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project activity's technology or industry type? (For certain technologies the relevant region for assessment will be local and for others it may be transnational/global.					
d. Was a region other than the entire host country chosen?	VVM	120	Not mandatory for small scale project;	OK	OK
e. If yes, was the explanation why this region is more appropriate assessed?	VVM	120	Not mandatory for small scale project.	OK	OK
f. Using official sources and local and industry expertise, was it determined to what extent similar and operational projects (e.g., using similar technology or practice), other than CDM project activities, have been undertaken in the defined region?	VVM	120	Not mandatory for small scale project.	OK	OK
g. Are similar and operational projects, other than CDM project activities, already "widely observed and commonly carried out" in the defined region?	VVM	120	Not mandatory for small scale project.	OK	OK
h. If yes, was it assessed whether there are essential distinctions between the proposed CDM project activity and the other similar activities?	VVM	120	Not mandatory for small scale project.	OK	OK
<b>7. Monitoring plan</b>					
a. Does the PDD include a monitoring plan?	VVM	122	Yes.	OK	OK
b. Is this monitoring plan based on the approved monitoring methodology applied to the proposed CDM project activity?	VVM	122	Yes. <b>CL 7</b> (a) As per the methodology AMS-I.D version 17, the parameter monitored is not complete, especially for the parameter of moisture and NCV.  (b) please apply the template of SSC-PDD to describe the parameters in section B.7.1.	<del>OK</del> <b>CL-7</b>	OK



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c. Were the list of parameters required by the the selected methodology identified?	VVM	123	Yes.	OK	OK
d. Does the monitoring plan contains all necessary parameters?	VVM	123	Yes.	OK	OK
e. Are the parameters clearly described?	VVM	123	All necessary parameters such as Net electricity exported to the grid, quantity of Mesocarp fibre, palm kernel shell, EFB fibre, Wood biomass, average round trip distance average load of the trucks used for transportation of biomass, average CO <sub>2</sub> emission factor for the truck are clearly described.	OK	OK
f. Does the means of monitoring described in the plan comply with the requirements of the methodology?	VVM	123	Yes, Net electricity exported to the grid will be measured in the export meter and would be recorded for billing purposes	OK	OK
g. Have all relevant parameters been monitored as indicated in the table of the methodology? PI state any deviations/omissions.	AMS	I.D	Yes, in line with local practices in power sector	OK	OK
h. Has the CO2 emission factor of the grid electircity measured either by Combined Margin or by the Weighted Average emission?	AMS	I.D	Grid emission factor for grid is calculated and published by CDM Energy Secretariat of Pusat Tenaga Malaysia (PTM) as "Study on Grid Connected Electricity Baselines Malaysia". PTM is official agency of DNA Malaysia	OK	OK
i. Has the CO2 emission factor of fossil fuel type i measured as per the .Tool to calculate project or leakage CO2 emissions from fossil fuel combustion."	AMS	I.D	NA	OK	OK
j. Has the Net calorific value of fossil fuel type i measured as per the .Tool to calculate project or a leakage CO2 emissions from fossil fuel combustion.	AMS	I.D	NA	OK	OK
k. Has the Quantity of fossil fuel consumed in year y	AMS	I.D	NA	OK	OK



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measured as per the .Tool to calculate project or a leakage CO2 emissions from fossil fuel combustion.					
l. Has the Quantity of net electricity supplied to the grid in year y measured using energy meters.	AMS	I.D	Yes.	OK	OK
m. Is the quantity of net electricity supplied to the grid in year y monitored/recorded - Continuous monitoring, hourly measurement and at least monthly recording? Notes on measurement method: - Calibration should be undertaken as prescribed in the relevant paragraph of General Guidelines to SSC Methodologies. - If applicable, measurement results shall be cross checked with records for sold/purchased electricity (e.g., invoices/receipts) - The net electricity export/supplied to a grid is the difference between the measured quantities of the grid electricity export and the import. If applicable, cross check net electricity supplied to a grid as gross energy generation in the project activity power plant minus the auxiliary/station electricity consumption, technical losses and electricity import from the grid to the project power plant measured at the grid interface/connection used for billing purposes	AMS	I.D	Yes. The quantity of net electricity supplied to the grid in year y is monitored/recorded continuously.  The meter would be calibrated as per manufacture standards.  Measurement results shall be crossed checked with invoice to the electric utilities namely TNB.	OK	OK
n. Is the Quantity of biomass consumed in year y monitored/recorded Continuously or estimate using annual energy/mass balance? Notes on measurement method: - Use mass or volume based measurements.	AMS	I.D	Yes. The quantity of biomass consumed in year y is monitored/recorded continuously.  Measurement method –use mass. Adjust for the moisture content in order to determine the	OK	OK





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<ul style="list-style-type: none"><li>- Adjust for the moisture content in order to determine the quantity of dry biomass.</li><li>- And/or perform an annual energy/mass balance that is based on purchased quantities and stock.</li><li>- For projects consuming biomass and fossil fuel to produce electricity, a specific energy consumption<sup>11</sup> of each type of fuel (biomass or fossil) to be used should be specified ex ante. The consumption of each type of fuel (biomass or fossil) shall be monitored. If fossil fuel is used, the electricity generation metered should be adjusted by deducting the electricity generation from fossil fuels using the specific energy consumption and the quantity of fossil fuel consumed. The amount of electricity generated using biomass fuels calculated then shall be compared with the amount of electricity generated calculated using specific energy consumption and amount of each type of biomass fuel used. The lower of the two values should be used to calculate emission reductions</li></ul>	quantity of dry biomass and an annual energy/mass balance would be performed based on purchase quantities and stock.
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o. Is the Moisture content of the biomass residues monitored atleast on a monthly basis?	AMS	I.D	Moisture content of the biomass residues monitored at least on a monthly basis.	OK	OK
p. Is the weighted average of the moisture content calculated for each monitoring period and used in the calculations? Notes on measurement method: On-site measurements In case of dry biomass, monitoring of this parameter is not necessary	AMS	I.D	The weighted average of the moisture content calculated will be used in the calculation. Compared with default values from the literature.	OK	OK
q. Is Net calorific value of biomass residue type k monitored annually? Notes on measurement method: Measurement in laboratories according to relevant national/international standards. Measure the NCV based on dry biomass. Check the consistency of the measurements by comparing the measurement results with measurements from previous years, relevant data sources (e.g. values in the literature, values used in the national GHG inventory) and default values by the IPCC. If the measurement results differ significantly from previous measurements or other relevant data sources, conduct additional measurements	AMS	I.D	Yes. Net calorific value of biomass is monitored annually.	OK	OK
r. Is the Standard deviation of the annual average historical net electricity generation delivered to the grid by the existing renewable energy plant that was operated at the project site prior to the implementation of the project activity calculated from data used to establish Eghistorical?	AMS	I.D	Not applicable.	OK	OK
s. Is the parameters relevant to reservoir based	AMS	I.D	Not applicable.	OK	OK



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hydro and geothermal plants monitored following the most recent version of ACM0002?					
t. Are the monitoring arrangements described in the monitoring plan feasible within the project design?	VVM	123	Yes. The monitoring arrangements described in the monitoring plan is in accordance with the methodology AMS I D version 17.	OK	OK
u. Does the monitoring plan provide details regarding calibration of monitoring equipments/ instruments or does it include zero check as a substitute for calibration? (zero check can not be considered as a substitute for calibration)	EB 24	37	Yes. Equipments uses are electricity meter and weighbridge. These equipments will be calibrated as per manufacturer standards.	OK	OK
v. Are the following means of implementation of the monitoring plan sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified:	VVM	123	-	-	-
i. data management procedures?	VVM	123	Yes.	OK	OK
ii. quality assurance procedures?	VVM	123	Yes.	OK	OK
iii. quality control procedures?	VVM	123	Yes.	OK	OK
<b>8. Sustainable development</b>					
a. Does the CDM project activity assists Parties not included in Annex I to the Convention in achieving sustainable development?	VVM	125	Yes.	OK	OK
b. Does the letter of approval by the DNA of the host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host Party?	VVM	126	Yes.	OK	OK
<b>9. Local stakeholder consultation</b>					
a. Were local stakeholders (public, including individuals, groups or communities affected, of likely to be affected, by the proposed CDM project activity or actions leading to the	VVM	128	Yes, A local stakeholder meeting was held on 28 <sup>th</sup> August 2008, i.e. prior to the publication of the PDD on the UNFCCC website from 17 June 2009 to 16 July 2009.	OK	OK



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implementation of such an activity) invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website?			Advertisement was published in newspaper "The star" on Thursday 21 August 2008". Letters of invitations were also sent to various institutions such as Malaysian Palm Oil Board, Tenaga National Berhad, the electric utility, Department of Environment etc.		
b. Have comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity been invited?	VVM	129	Yes.	OK	OK
c. Is the summary of the comments received as provided in the PDD complete?	VVM	129	Yes.	OK	OK
d. Have the project participants taken due account of any comments received and described this process in the PDD?	VVM	129	Yes.	OK	OK
<b>10. Environmental impacts</b>					
a. Have the project participants submitted documentation on the analysis of the environmental impacts of the project activity?	VVM	131	Under Malaysian Environmental Quality (EIA) (Prescribed Activities) order 1987, the project activity does not required to carry out EIA. However, the installation of a boiler with stack emission require written approval from Department of Environment.	OK	OK
b. Have the project participants undertaken an analysis of environmental impacts?	VVM	132	Although PP does not require to carry out EIA, a brief review of the environmental impacts due to the project activity is discussed. Overall, the impacts are not significant.	OK	OK
c. Does the host Party require an environmental impact assessment?	VVM	132	Not applicable.	OK	OK
d. If yes, have the project participants undertaken an environmental impact assessment?	VVM	132	Not applicable	OK	OK

Table 2 Specific validation activities

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
<b>1. Project design of small-scale clean development mechanism project activities</b> <i>(delete this table if the project activity is not a small scale project activity)</i>					
a. Does the proposed small-scale project activity meet the requirements of the simplified modalities and procedures for small-scale CDM project activities?	VVM	135	Yes, the proposed biomass based power plant with an installed capacity of 11 MW which is less than 15MW, meets the requirements of the simplified modalities and procedures for small scale CDM project activities.	OK	OK
b. Does the project activity qualify within the thresholds of the three possible types of small scale project activities? [Type (i) project activities: renewable energy project activities with a maximum output capacity equivalent to up to 15 megawatts; Type (ii) project activities: energy efficiency improvement project activities which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 gigawatt hours per year; Type (iii) project activities: other project activities that both reduce anthropogenic emissions by sources and directly emit less than 15 kilotonnes of carbon dioxide equivalent annually.]	VVM	136	The project activity is a biomass based power plant of 11 MW capacity qualify within the type 1 project activity with a maximum output capacity equivalent up to 15 MW.	OK	OK


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c. Does the project activity conform to one of the approved small-scale categories?	VVM	136	Yes. Type I – Renewable energy project Project category: I.D. Grid connected renewable electricity generation.	OK	OK
d. Does the project activity apply the relevant tool and methodology?	VVM	136	Yes.	-	-
e. Are the small-scale methodologies applied in conjunction with the general guidelines to SSC CDM methodologies, which provide guidelines on equipment capacity, equipment performance/lifetime, baseline identification for type-II/III greenfield project activities, sampling and other monitoring-related issues?	VVM	136	Not applicable.	OK	OK
f. Is the project activity a debundled component of a large-scale project, i.e., is there a registered small-scale CDM project activity or an application to register another CDM project activity: (a) with the same project participants; (b) in the same project category and technology/measure; and (c) registered within the previous 2 years; and (d) whose project boundary is within 1 km of the proposed boundary of the proposed small-scale activity at the closest point?	VVM	136	No.	OK	OK
g. Is an assessment of the environmental impacts of the proposed CDM project activity required by the host Party?	VVM	136	EIA is not required by the host party.	OK	OK
h. Is the project additional?	VVM	137	Yes.	OK	OK



Table 3 Resolution of Corrective Action and Clarification Request

Clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation conclusion team
CAR-1 LoA from DNA Malaysia and Japan not provided	1.a	PP has received LoA from DNA Malaysia DNA Japan	Verified LoA from DNA Malaysia and Japan and CAR-1 is closed
CAR 2 The benchmark stated in the PDD upload for GSP is 8.25% but had been changed to 8.98% in the latest version of PDD, Please explain.	6m iv	The benchmark considered in the PDD for GSP was the commercial lending rate indicated by Alliance Bank for projects planned by the PP. Later the PP decided not to avail the loan from the bank and it was decided to proceed with internal investments. Therefore, the earlier letter from the bank became irrelevant and therefore the benchmark had to be corrected. Since the benchmark as per investment guidance is the commercial lending rates, Bank Negara (Central Bank of Malaysia) 's annual report which is a publicly available document along with spread was used as the benchmark. Hence, the change.	Verified the response and found appropriate and CAR 2 is closed.



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<p>CAR 3</p> <p>For the sensitivity analysis:</p> <p>(1) Please assess the main parameters in the sensitivity analysis as per guidelines on the assessment of investment analysis, version 5.</p>	<p>6 m vi</p>	<p>(1) As per paragraph 20 of this Guidelines, "Only variables, including the initial investment cost, that constitute more than 20% of either total project costs <u>or</u> total project revenues should be subjected to reasonable variation". In the PDD, both investment costs and revenue have been subjected to variation for sensitivity analysis. The Guidelines demands only investment cost or revenues whereas sensitivity analysis has been conducted for both, which is conservative.</p> <p>More over, the Guidance mentions to analyse only for those variables which constitute more than 20 % of the investment cost. For example, it would have been adequate only if boiler cost (which is more than 20 % of the total investment cost) is alone varied. However, the sensitivity analysis has been done for 50 % of the entire plant and machinery cost which is very conservative. It may be please noted that, IRR for all variations are still lower than benchmark. Additionally, sensitivity analysis has also been carried out for O&amp;M costs too.</p>	<p>Verified the sensitivity analysis provided and found appropriate and hence CAR 2 closed.</p>
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(2) Please further assess the sensitivity analysis for all indicators on under which conditions the IRR will cross the benchmark and the possibility		(2) Sensitivity analysis has been carried.	
CL 1 Page 3 of the PDD stated BPI operates a palm oil mill and proposes to enhance the processing capacity to process about 500,000 tons of FFB/year. Please provide approval letter from Department of Environment and what is that capacity of the palm oil mill now.	3 d i	The DOE approval is attached as Attachment 1 for your reference.	Verified approval letter from Department of Environment for the mill capacity increase and hence CL1 closed.
CL 2 As per the definition of Annex 18, EB23, please further clarify the fuel is the renewable biomass, especially for the woods and biogas.	3 d i.	The definitions for renewable biomass have been explained for all the biomass in Table B-1 in section B.2. Biogas has been removed from the project activity.	Verified the changes provided and hence CL2 closed.
CL 3 PDD has not described the sound technology transferred to the host party	3 g ii.	The technology implemented in the project activity is commercially available boiler and turbine technology. All necessary safety precautions will be implemented in the project activity. There is no technology transfer from Annex I Party. Section A.4.2 has been amended in revised PDD version 2.3 to reflect this.	Verified the changes in PDD and found appropriate and hence CL3 closed.



## VALIDATION REPORT

<p>CL 4 Please provide the Plant Load Factor (PLF) of the Project and its data source should be indicated.</p>	<p>3 g ii.</p>	<p>Plant load factor for the first year – 75% Plant load factor for the second year – 80%  From the third year, it is estimated and expected and that the project activity would operate for 8000 hours per year which works out to 91.3%.  The above are sourced from Feasibility Study which are based on estimates and general experience.</p>	<p>Verified plant load factor in FSR and found appropriate and hence CL4 closed.</p>
<p>CL 5 Please provide evidence that CDM was seriously considered in the decision to proceed with the project activity.</p>	<p>3 o iii</p>	<p>CDM consideration for the project activity was well established. Notifications were sent to UNFCCC and DNA before the investment in the project. The PP was already operating a CDM project and therefore was well aware of CDM, the expected incentives. Please refer the attached feasibility study, which very clearly shows that the project is attractive only with anticipated revenues from sale of CERs that would be achieved by the project activity.</p>	



## VALIDATION REPORT

<p>CL6</p> <p>Please explain the chronology of events including timelines in detail the PDD</p> <p>Please provide contract with consultant and PP.</p> <p>Please provide Emission Reduction Purchase agreement</p>	6 b a	<p>The chronology of events and time lines are mentioned in section B.5 in the attached revised PDD version 2.3</p> <p>Contract between PP and consultant already available</p> <p>Emission Reduction Purchase Agreement (ERPA) is under discussion for various legal and commercial issues. It will be forwarded to you when final ERPA is concluded. However, a Term Sheet has been signed and the Buyer from Annex I Party (Japan) has already obtained the approval from Japan Government which clearly establishes Annex I Participation in the project activity. The price of CER that was considered in the investment analysis is the price that was available and indicated at the time of investment decision</p>	<p>Verified the chronology of events and time lines in section B5 of the PDD and found appropriate and hence CL6 closed.</p>
<p>CL 7</p> <p>As per the methodology AMS-I.D version 17, the parameter monitored is not complete, especially for the parameter of moisture and NCV.</p> <p>Please apply the template of SSC-PDD to describe the parameters in section B.7.1.</p>	7 b	<p>The parameters are now added to monitor moisture content and NCV as per methodology AMS ID version 17 in the attached PDD in section B.7.1</p> <p>The parameters in section B.7.1 are amended as per SSC PDD template in the revised PDD version 2,4</p>	<p>Verified the monitoring plan in accordance with methodology AMS 1D and hence CL7 closed.</p>